

20 Years of School Funding Post-DeRolph
Ohio Education Policy Institute
August 2018

The 15 charts that accompany this summary provide an overview of how state and local funding has changed in 20 years in Ohio since FY1999. After the first Supreme Court ruling in the *DeRolph* lawsuit on March 24, 1997 a state panel was assembled to review and revise Ohio's school funding formula. FY1999 was the first year that the new formula was implemented.

Conclusion: Ohio's lowest wealth school districts (FY99-FY19) received a 29.4% increase in state local and local revenues after adjusting for inflation. This increase is only 3.8 percentage points greater than the inflation-adjusted increase in state and local revenue received by Ohio's wealthiest school districts (25.6%) over the same time period.

Methodology

The analysis here reviewed data on state and local revenue from Ohio's 600+ school districts from FY1999 through FY2019. FY19 data is estimated based on the ODE July #1 School Finance Payment report, ODE estimates of FY19 Tangible Personal Property Tax (TPP) replacement payments made by the state to eligible school districts, Tax Year 2017 property operating revenues and FY18 (the most current available) school district income tax and casino tax revenue figures. Because of mergers and separations of districts over the FY99-FY19 time frame, 6 districts were eliminated from the analysis, as were 2 Lake Erie island school districts with low student enrollment, leaving 604 school districts in the study.

The 15 charts here focus on an analysis of Ohio state and local revenue based on property wealth quintiles. The property tax quintile approach breaks Ohio's 604 school districts under study here in to 5 equal-sized groups based on property wealth (quintiles 1-4 have 121 districts and quintile 5 consists of 120 districts). The quintiles are based on property wealth per pupil with quintile 1 reflecting the 120 lowest wealth school districts and quintile 5 reflecting the 120 highest wealth school districts. Because district property wealth has changed over the FY99-FY19 time frame as a result of a variety of circumstances (changes in tangible personal property taxation, changes in agricultural property values, changes in the value of land used for oil and gas exploration, inflationary changes in residential and business & commercial property), the property wealth quintiles used in this analysis are based upon an average of FY99 and FY19 property value per pupil in each school districts.

Finally, in order to provide a proper comparison of funding levels over time, state and local revenues have been adjusted for inflation using the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) inflation measure. Inflation totaled 50.74% from FY99 through FY18, an annual average rate of 2.67% per year.

Findings

The first 3 charts show per pupil local, state and combined state + local revenues for each quintile in FY99, FY09 and FY19. All figures are inflation adjusted.

- Per pupil **local revenues** are clearly highest for Quintile 5 (the wealthiest districts) and lowest for quintile 1 (the poorest districts.)
- In direct contrast, per pupil **state revenues** are highest for Quintile 1 and lowest for quintile 5. This result should not be surprising, as the fundamental objective of the state aid formula is to provide more state funding to lower wealth districts in order to offset their lower local revenue capacity.
- Chart 3, which combines state and local revenues, tells the most interesting story – it indicates that while **state & local revenues** have increased for all wealth quintiles, the lowest wealth districts still have lower total revenues per pupil than do the highest wealth districts.

The next 3 charts take the data shown in charts 1-3 and *show the dollar change* in per pupil local, state and combined state + local revenues for each quintile from FY99 to FY09 and from FY09 to FY19. These charts allow us to observe which quintiles experienced higher growth in state and local revenues over the FY99 to FY19 time period.

- Chart 4 shows that inflation-adjusted per pupil **local revenues actually decreased for the poorest school districts (Q1)** and grew the most in the wealthiest school districts (Q5).
- Chart 5 shows that the low wealth districts experienced the largest increase in **state aid per pupil** over the FY99-FY19 time period. In addition, per pupil state revenue once adjusted for inflation, actually **decreased in quintiles 3, 4 and 5 over the FY09-FY19 time frame.**
- While per pupil state and local revenues increased for all quintiles once adjusted for inflation, the *increase for the lowest wealth districts (\$1,775 per pupil) was only \$107 more than was the increase for the highest wealth districts (\$1,668 per pupil).* This is an indication that the funding gap between low wealth and high wealth districts was not been narrowed appreciably since the *DeRolph* decision.

Charts 7-9 take the data shown in charts 1-3 and show the *percentage change* in per pupil local, state and combined state + local revenues for each quintile from FY99 to FY09 and from FY09 to FY19.

Chart 7 shows that quintiles 2-5 all experienced a percentage increase of 20-28% in inflation-adjusted per pupil **local revenues** from FY99-FY19, while quintile 1 districts experienced a decrease.

- Chart 8 shows that in percentage terms the wealthiest school districts (Q5) had the highest rate of growth in per pupil state revenues from FY99-FY19. Perhaps even more significant is the finding that *for all quintiles, much higher growth in state aid occurred from FY99-FY09 than occurred from FY09-FY19. In other words, the limited funding progress in 20 years since DeRolph occurred overwhelmingly in the first 10 years.*
- Chart 9 shows that when **state and local** revenues are totaled, the percentage growth from FY99-FY19 is not terribly different across the wealth quintiles. Quintile 1 districts experienced a 29.4% increase over the time period while quintile 5 districts experienced 25.6% growth.

Charts 10-12 reinforce one of the points made above that the change local, state and combined state and local revenues was not uniform over the FY99-19 twenty-year time frame.

- Chart 10 shows that for all wealth quintiles **local revenues** increased more in the FY09-FY19 time frame than was the case in the FY99-FY09 time frame.
- Chart 11 shows that the exact opposite pattern was true for **state revenues**, with a much higher increase apparent in the first 10 years after the *DeRolph* decision (FY99-FY09) than in the second 10 years (FY09-FY19). As was mentioned above, inflation adjusted per pupil state aid on average actually decreased for quintile 3,4 and 5 districts from FY09-FY19.
- *Chart 12 shows that over 70% of the increase in state and local revenues combined occurred from FY99-FY09 for all 5 wealth quintiles.*

Charts 13-15 provide a final perspective on the change in state and local revenues in the 20 years since the *DeRolph* decision. This perspective is shown by comparing the local, state, and combined state plus local revenues for each quintile to the state average level of revenues in each year.

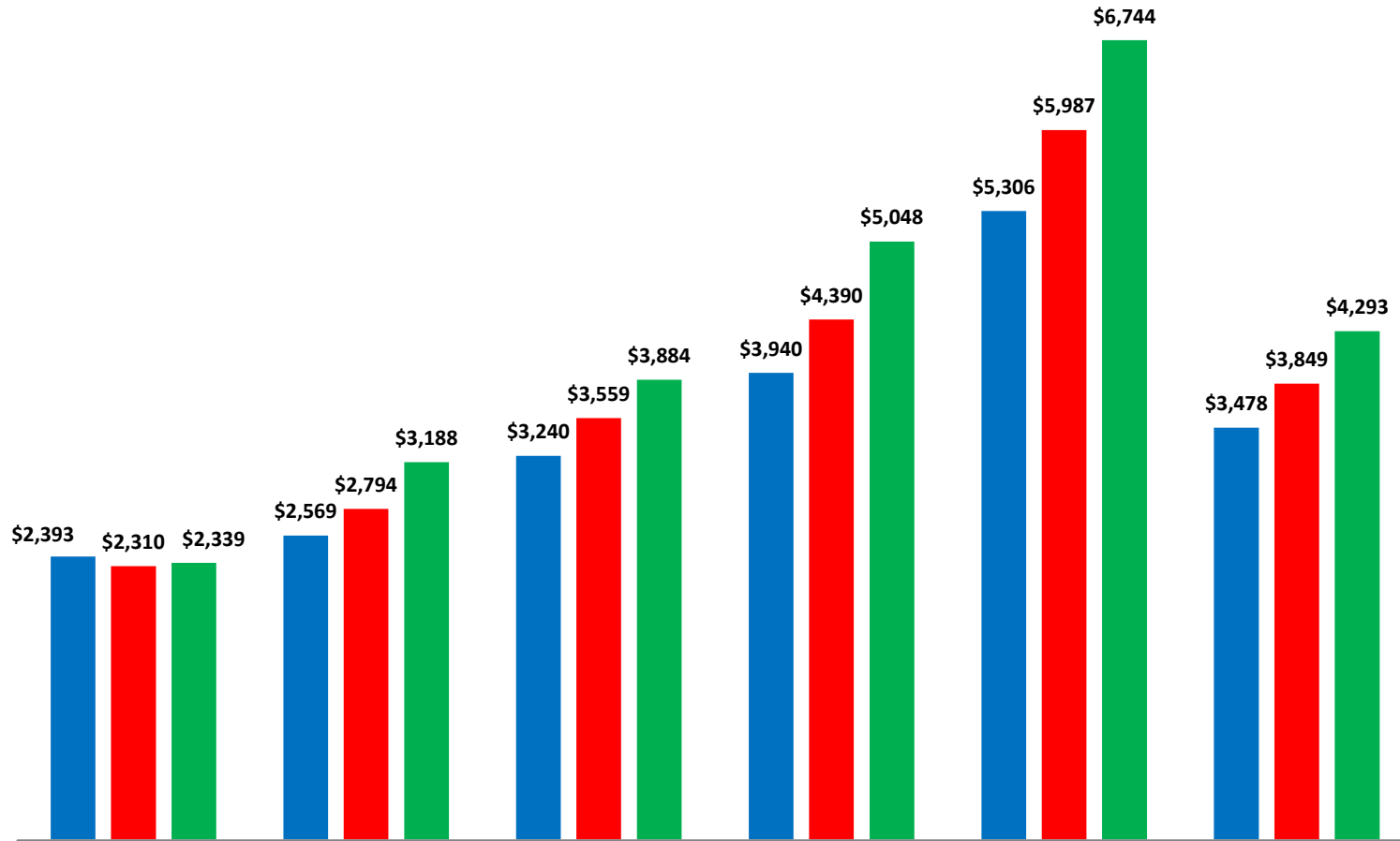
- Chart 13 shows that low wealth (Q1) districts experienced a decrease in their per pupil **local revenues** compared to the state average from FY99-FY19. Meanwhile, high wealth districts experienced an increase in their per pupil local revenues compared to the state average from FY99-FY19.
- Chart 14 shows that the exact opposite pattern is shown for **state revenues**. The lowest wealth districts now receive a higher share of state revenues compared to the state average level than they did in FY99, while the wealthiest districts now receive a lower share of state revenues than they did in FY99.

- Chart 15 shows that Q1 districts now receive a slightly higher share of **state + local** revenues than they did in FY99 (103.2% vs. 101.5%). At the opposite end of the spectrum, Q5 districts now receive a slightly lower share of state + local revenues than they did in FY99 (108.3% vs. 109.7%). ***Chart 15 shows that the overall distribution of state and local revenues is not significantly different in FY19 than it was 20 years prior in FY99.***

Bottom Line

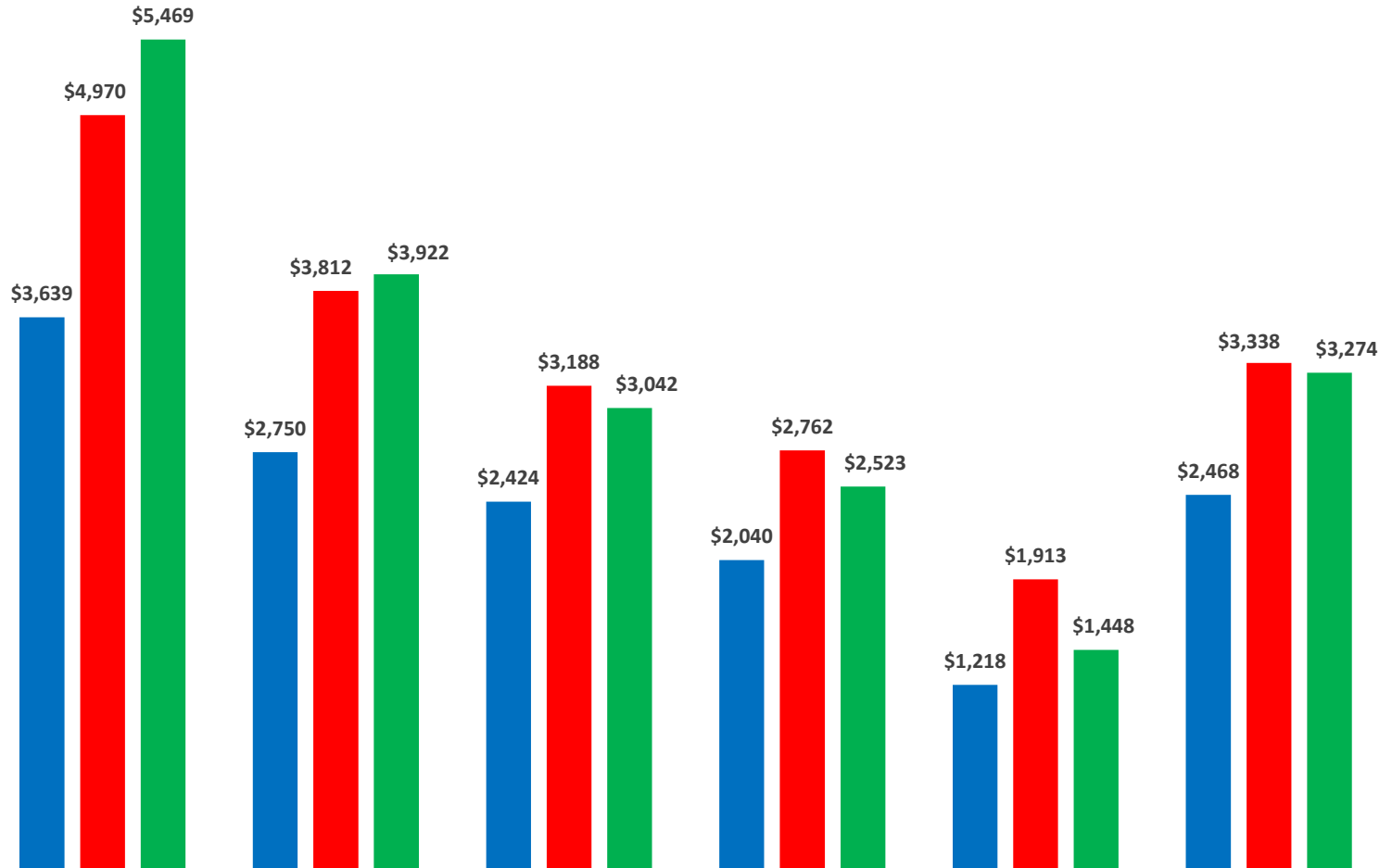
Chart 16 shows that *from FY99-FY19 Ohio's lowest wealth school districts received a 29.4% increase in state local and local revenues after adjusting for inflation. This increase is only 3.8 percentage points greater than the inflation-adjusted increase in state and local revenue received by Ohio's wealthiest school districts (25.6%) over the same time period.* In light of this, it is no wonder that the overall distribution of state and local revenue across Ohio school districts has not changed appreciably in the aftermath of *DeRolph*, as shown by Chart 15.

Local Revenue Per Pupil: FY99, FY09, & FY19 (Inflation Adjusted)



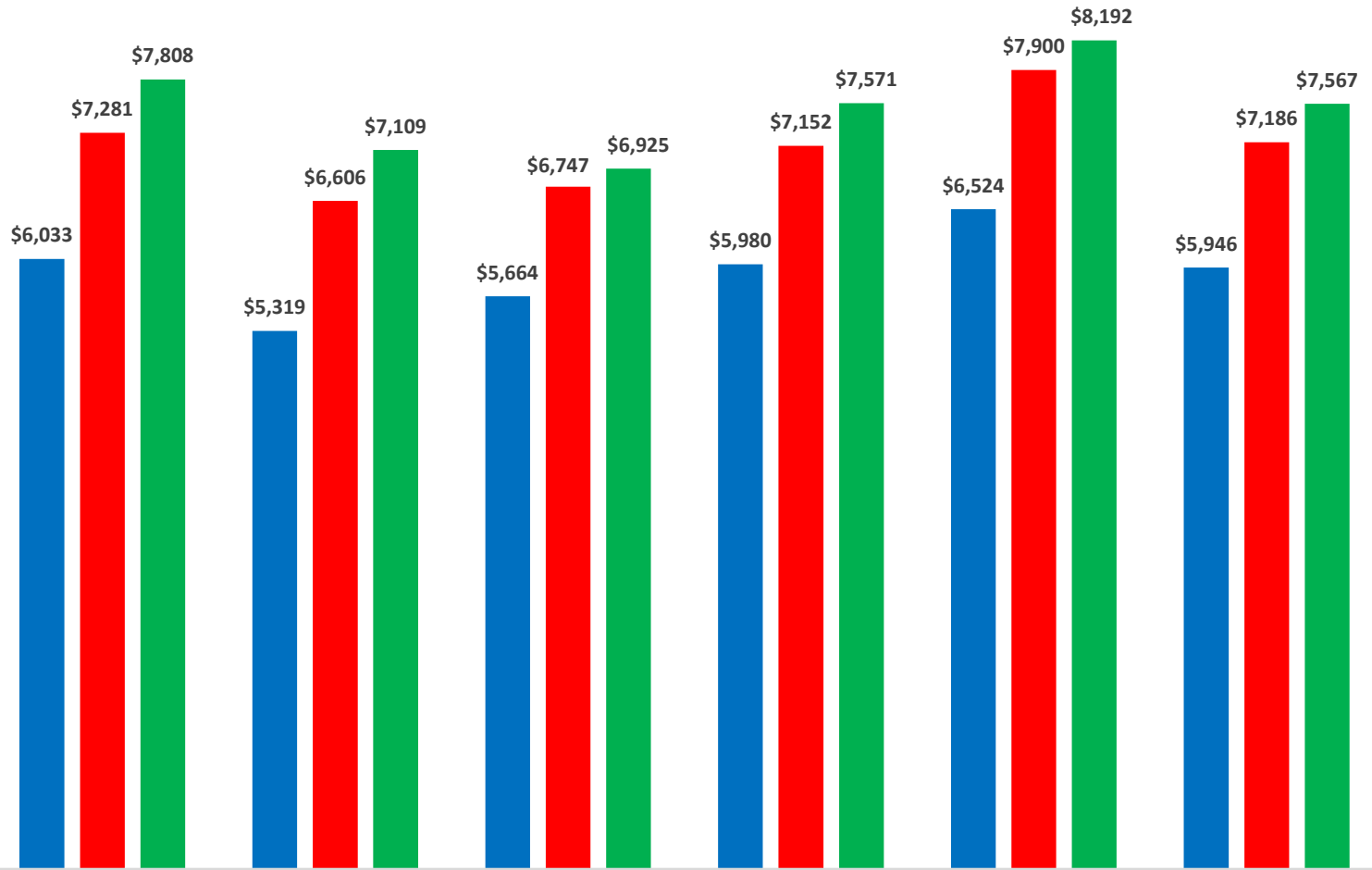
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	State Avg.
■ FY99	\$2,393	\$2,569	\$3,240	\$3,940	\$5,306	\$3,478
■ FY09 (in FY99 \$)	\$2,310	\$2,794	\$3,559	\$4,390	\$5,987	\$3,849
■ FY19 (in FY99 \$)	\$2,339	\$3,188	\$3,884	\$5,048	\$6,744	\$4,293

State Revenue Per Pupil: FY99, FY09, & FY19 (Inflation Adjusted)



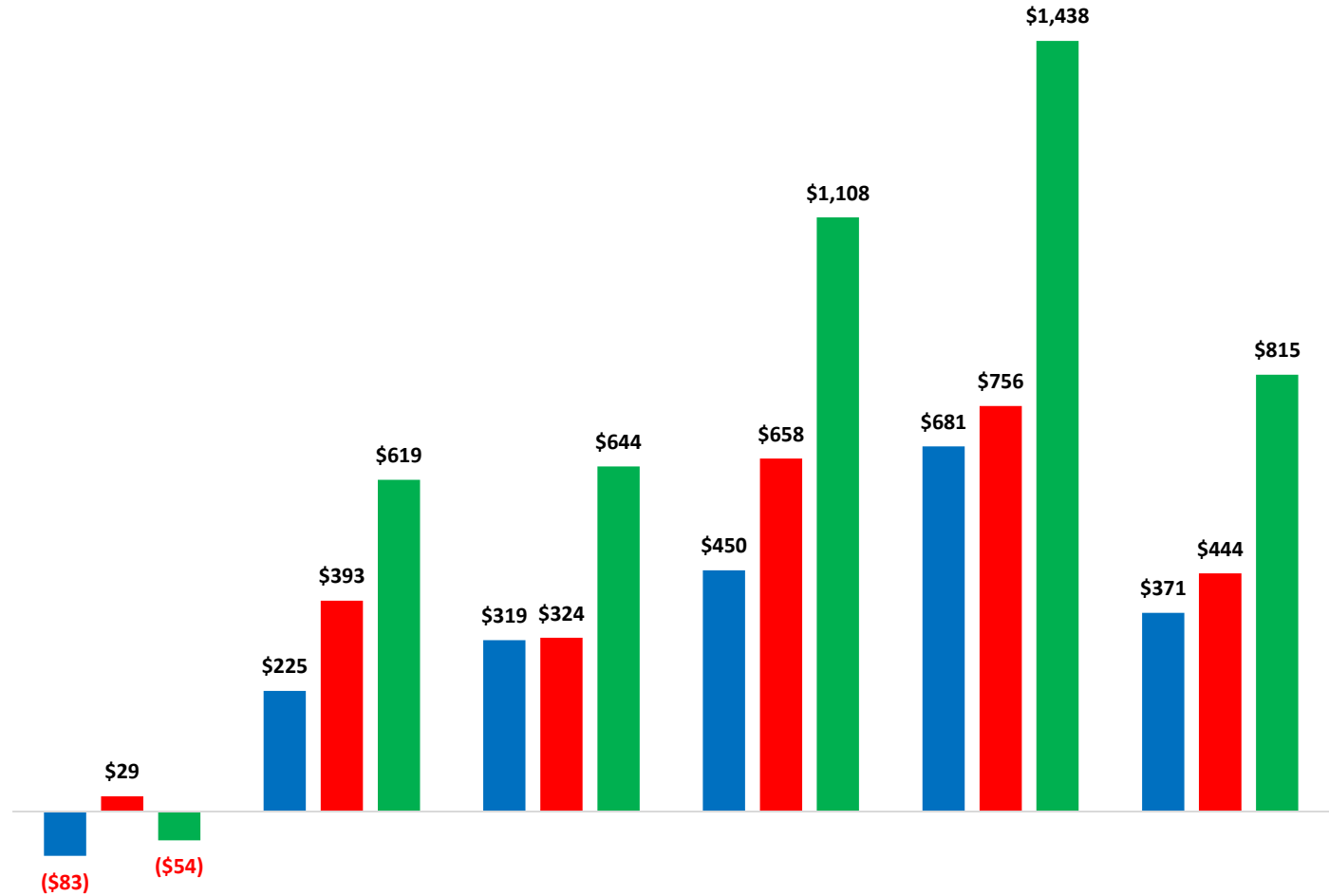
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	State Avg.
FY99	\$3,639	\$2,750	\$2,424	\$2,040	\$1,218	\$2,468
FY09 (in FY99 \$)	\$4,970	\$3,812	\$3,188	\$2,762	\$1,913	\$3,338
FY19 (in FY99 \$)	\$5,469	\$3,922	\$3,042	\$2,523	\$1,448	\$3,274

Local & State Revenue Per Pupil: FY99, FY09, & FY19 (Inflation Adjusted)



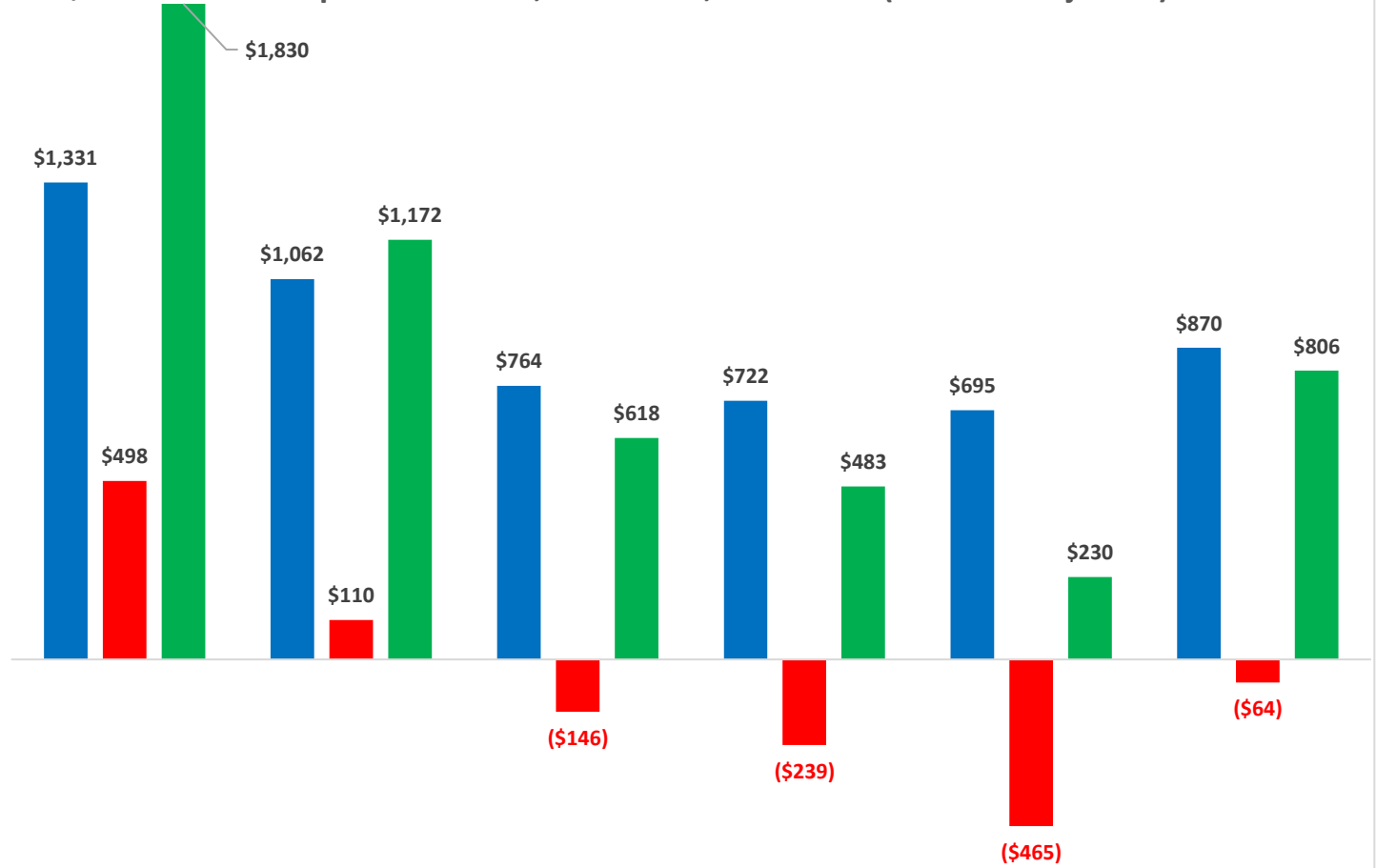
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	State Avg.
FY99	\$6,033	\$5,319	\$5,664	\$5,980	\$6,524	\$5,946
FY09 (in FY99 \$)	\$7,281	\$6,606	\$6,747	\$7,152	\$7,900	\$7,186
FY19 (in FY99 \$)	\$7,808	\$7,109	\$6,925	\$7,571	\$8,192	\$7,567

Local Revenue \$ Increase Per Pupil: FY99-FY09, FY09-FY10, FY99-FY19 (Inflation Adjusted)



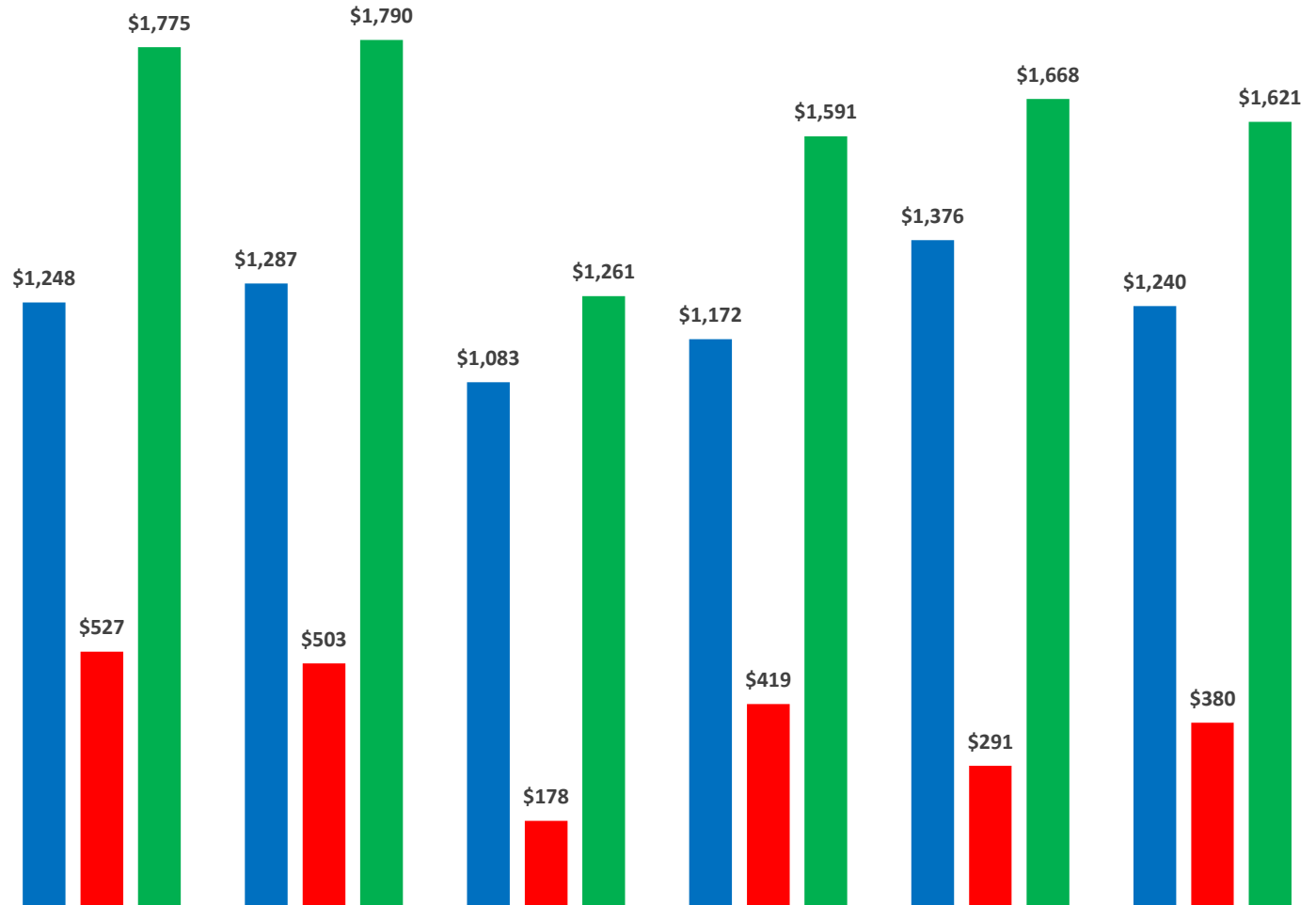
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	State Avg.
FY99 to FY09 Increase \$	(\$83)	\$225	\$319	\$450	\$681	\$371
FY09 to FY10 Increase \$	\$29	\$393	\$324	\$658	\$756	\$444
FY99 to FY19 Increase \$	(\$54)	\$619	\$644	\$1,108	\$1,438	\$815

State Revenue \$ Increase Per Pupil: FY99-FY09, FY09-FY10, FY99-FY19 (Inflation Adjusted)



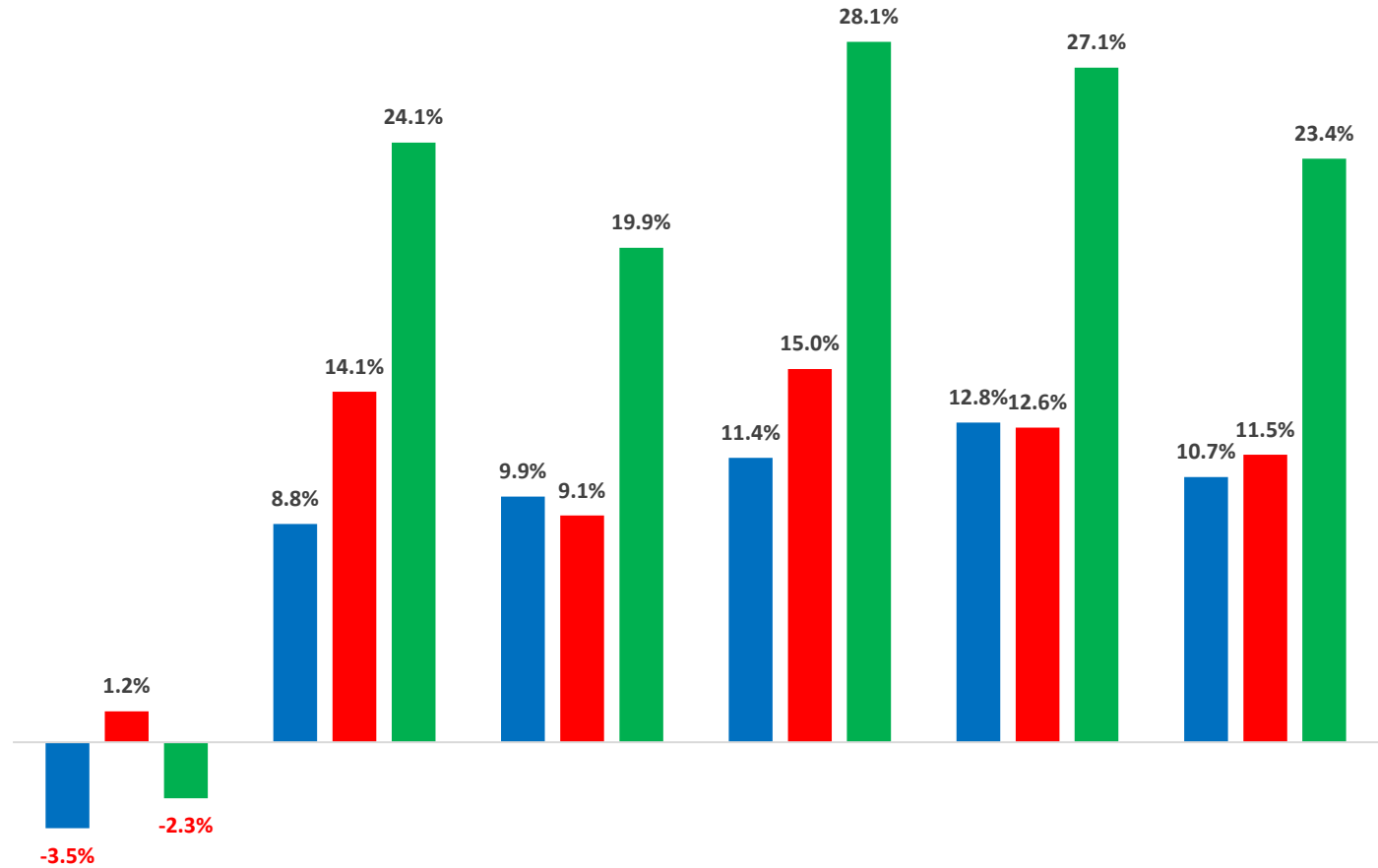
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	State Avg.
■ FY99 to FY09 Increase \$	\$1,331	\$1,062	\$764	\$722	\$695	\$870
■ FY09 to FY10 Increase \$	\$498	\$110	(\$146)	(\$239)	(\$465)	(\$64)
■ FY99 to FY19 Increase \$	\$1,830	\$1,172	\$618	\$483	\$230	\$806

Local & State Revenue \$ Increase Per Pupil: FY99-FY09, FY09-FY10, FY99-FY19 (Inflation Adjusted)



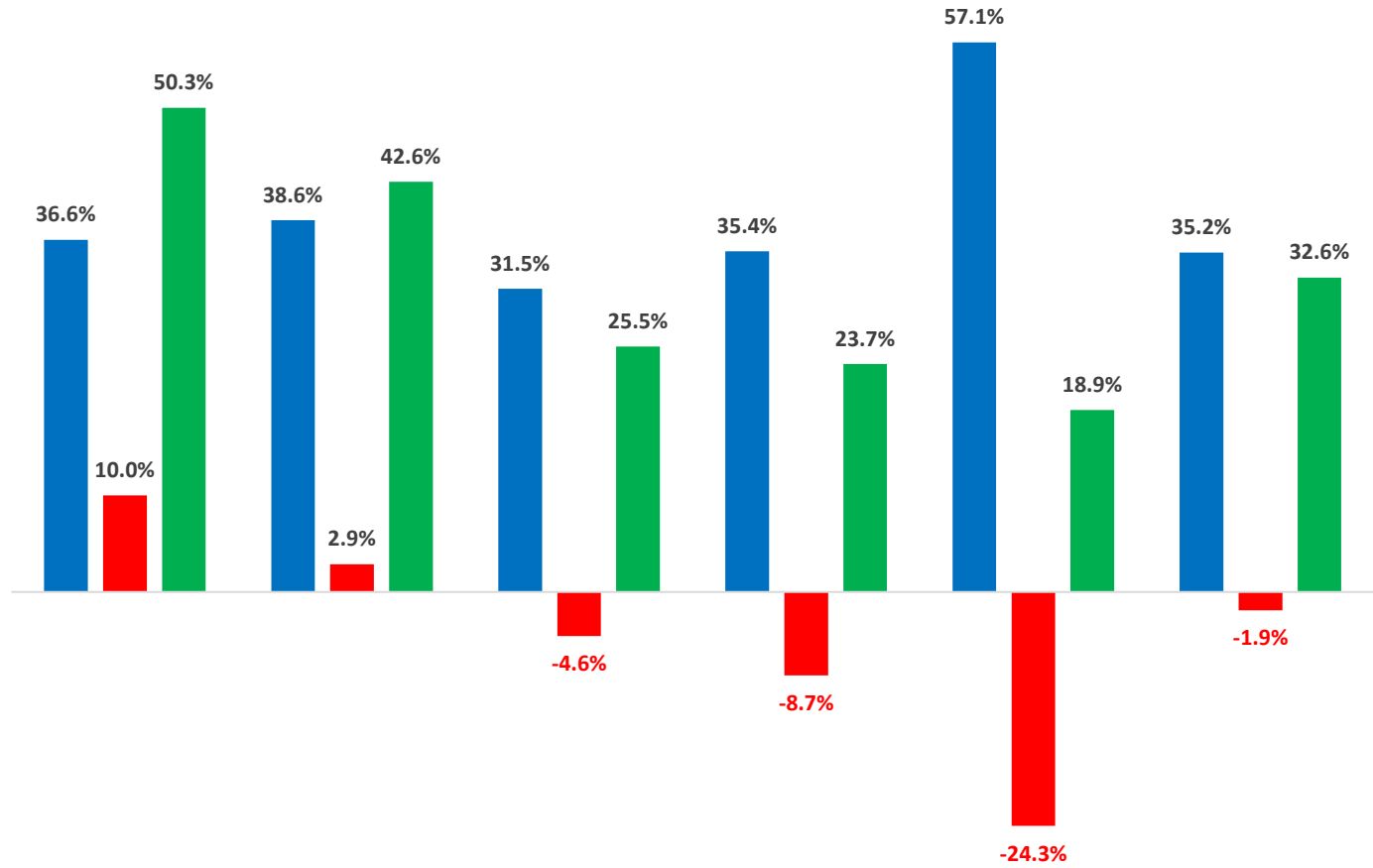
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	State Avg.
FY99 to FY09 Increase \$	\$1,248	\$1,287	\$1,083	\$1,172	\$1,376	\$1,240
FY09 to FY19 Increase \$	\$527	\$503	\$178	\$419	\$291	\$380
FY99 to FY19 Increase \$	\$1,775	\$1,790	\$1,261	\$1,591	\$1,668	\$1,621

Local Revenue % Increase: FY99-FY09, FY09-FY19, FY99-FY19 (Inflation Adjusted)



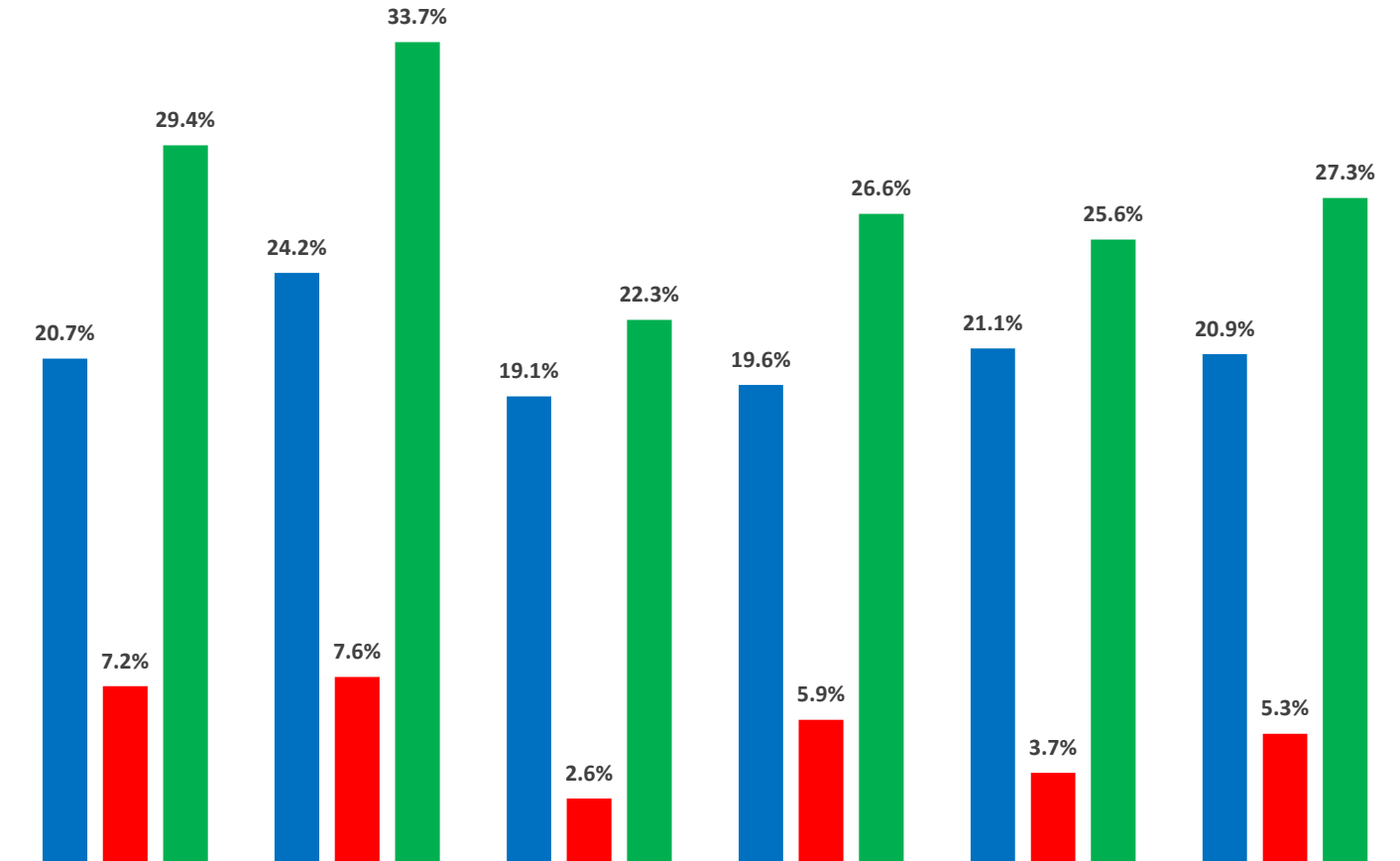
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	State Avg.
■ FY99 to FY09 Increase \$	-3.5%	8.8%	9.9%	11.4%	12.8%	10.7%
■ FY09 to FY19 Increase \$	1.2%	14.1%	9.1%	15.0%	12.6%	11.5%
■ FY99 to FY19 Increase \$	-2.3%	24.1%	19.9%	28.1%	27.1%	23.4%

State Revenue % Increase: FY99-FY09, FY09-FY19, FY99-FY19 (Inflation Adjusted)



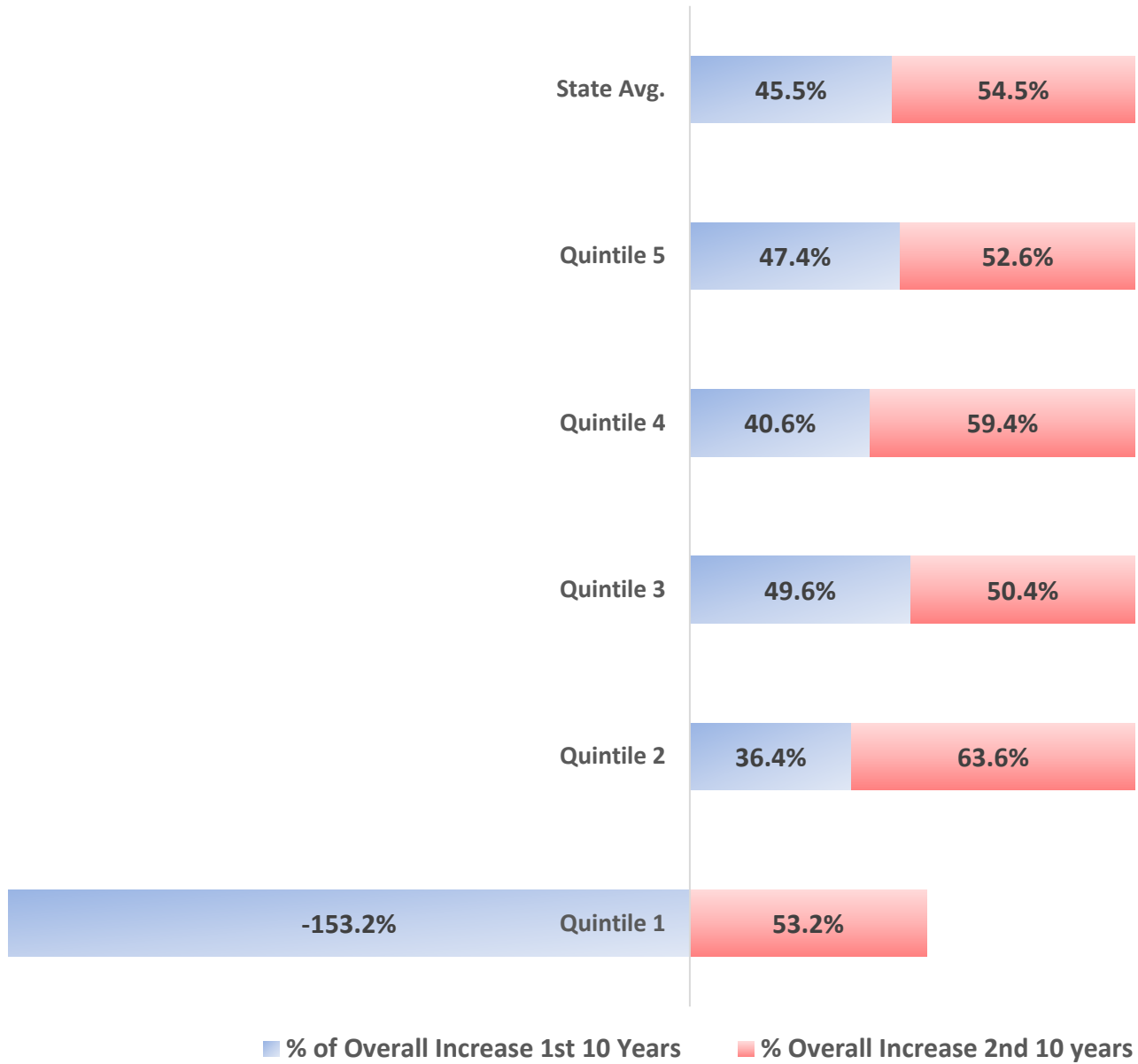
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	State Avg.
■ FY99 to FY09 Increase %	36.6%	38.6%	31.5%	35.4%	57.1%	35.2%
■ FY09 to FY19 Increase %	10.0%	2.9%	-4.6%	-8.7%	-24.3%	-1.9%
■ FY99 to FY19 Increase %	50.3%	42.6%	25.5%	23.7%	18.9%	32.6%

Local & State Revenue % Increase: FY99-FY09, FY09-FY19, FY99-FY19 (Inflation Adjusted)

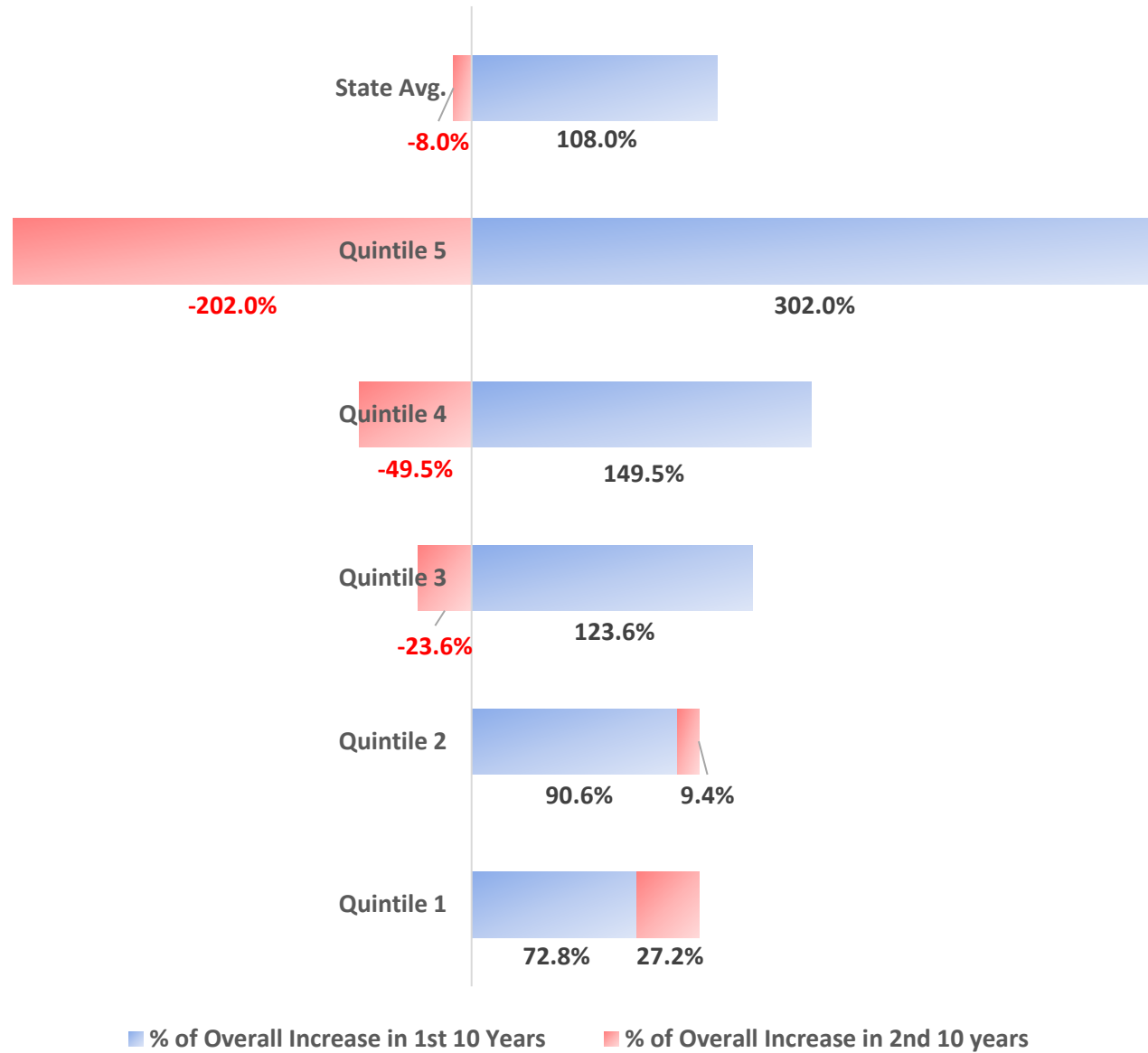


	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	State Avg.
■ FY99 to FY09 Increase %	20.7%	24.2%	19.1%	19.6%	21.1%	20.9%
■ FY09 to FY19 Increase %	7.2%	7.6%	2.6%	5.9%	3.7%	5.3%
■ FY99 to FY19 Increase %	29.4%	33.7%	22.3%	26.6%	25.6%	27.3%

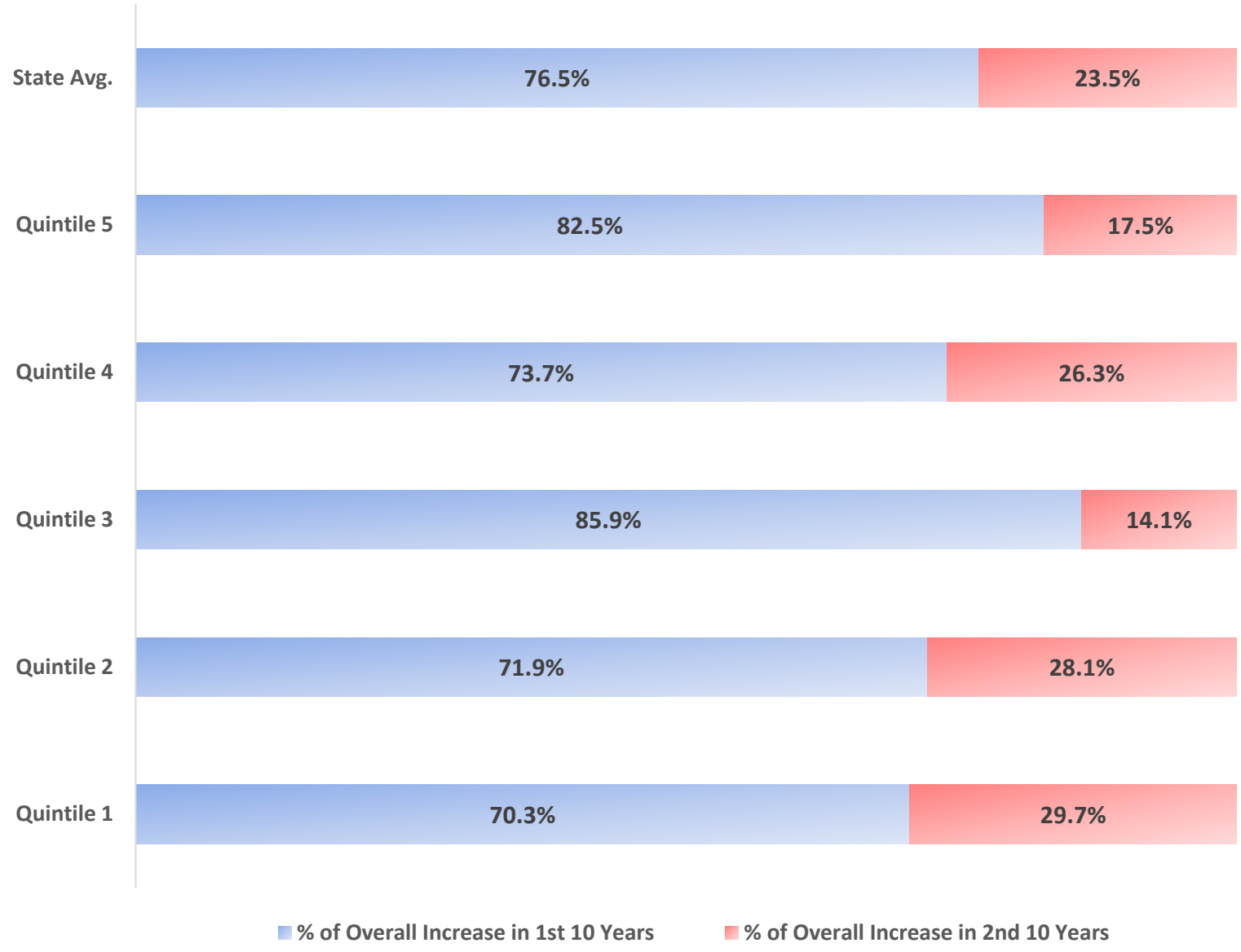
Local % of Overall Increase In Revenue: FY99-FY19 First 10 Years (Blue) vs. Second Ten Years (Red)



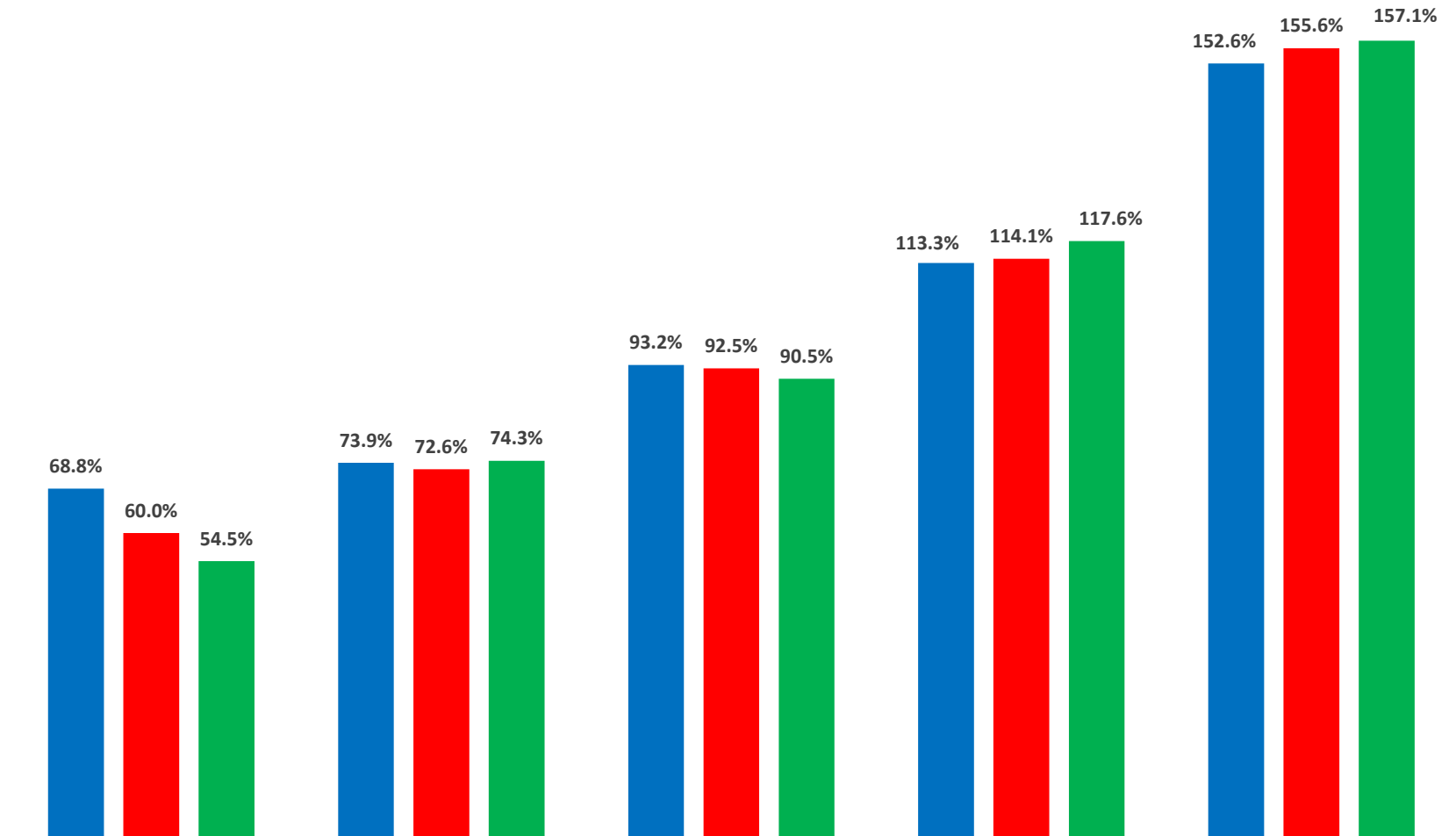
State % of Overall Increase In Revenue: FY99-FY19 First 10 Years (Blue) - Second Ten Years (Red)



Local & State % of Overall Increase In Revenue: FY99-FY19 First 10 Years (Blue) - Second Ten Years (Red)

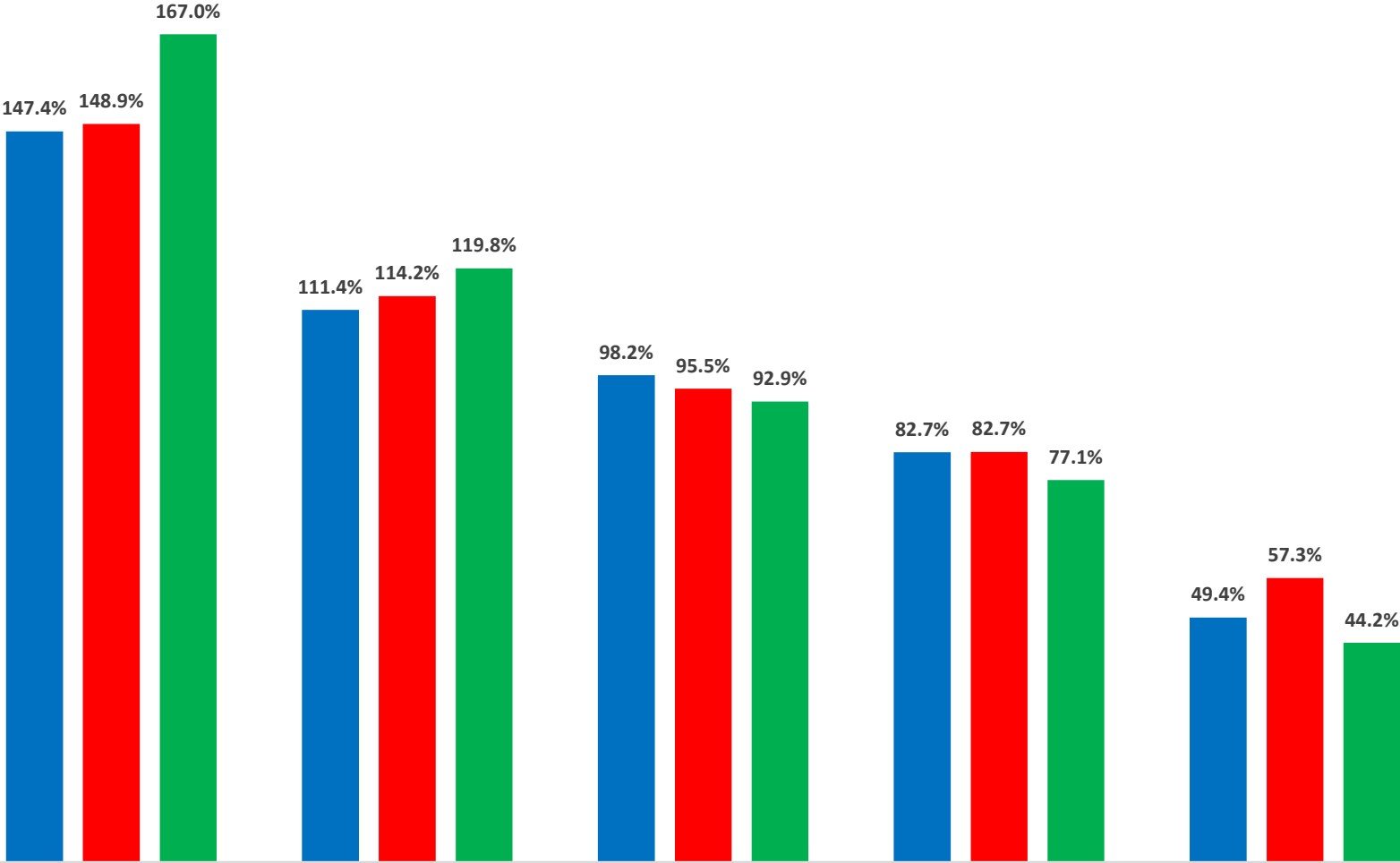


Local Revenue: Quintile % of State Average FY99-FY09-FY19



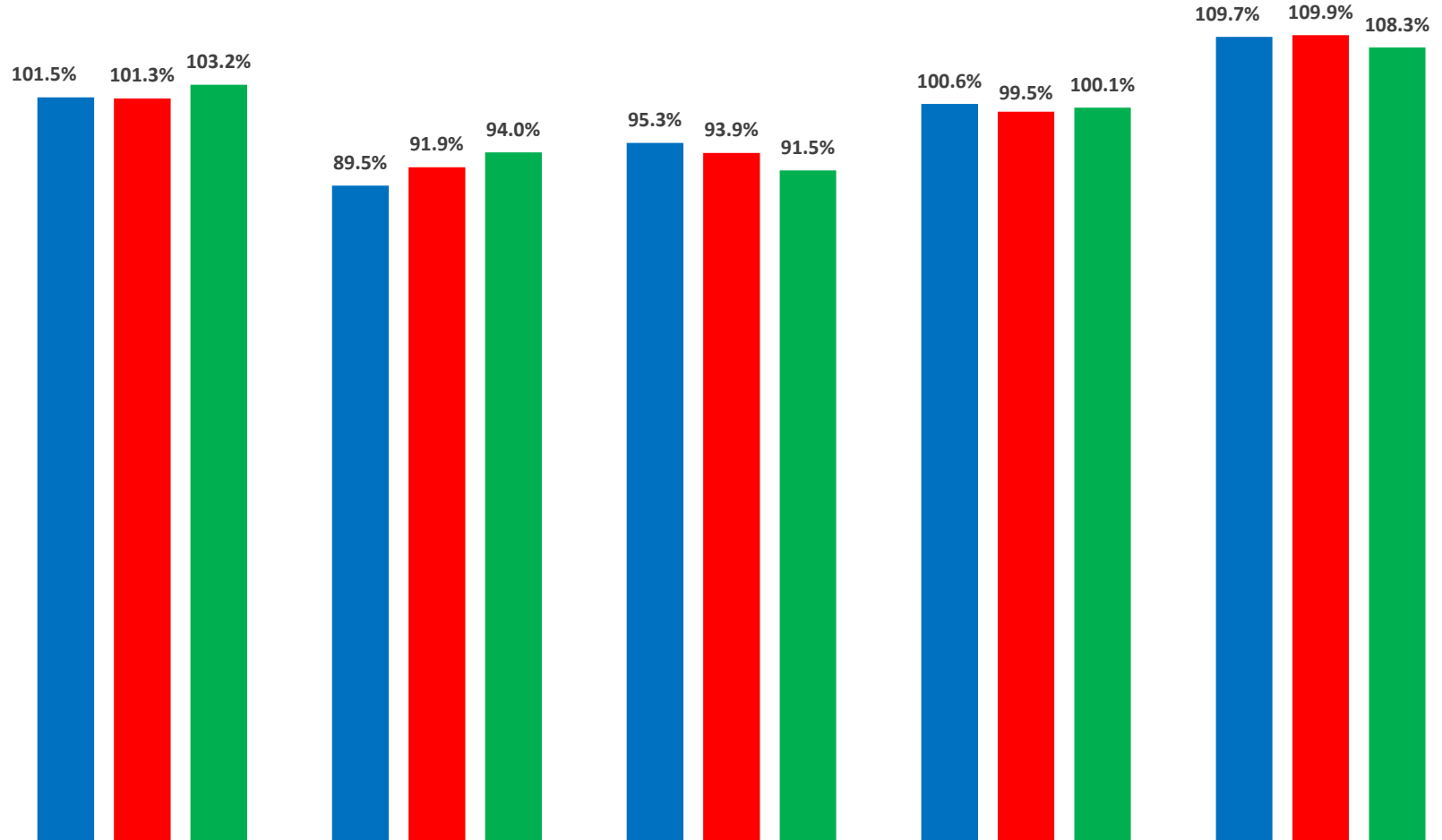
	Quintile 1 % of State Avg.	Quintile 2 % of State Avg.	Quintile 3 % of State Avg.	Quintile 4 % of State Avg.	Quintile 5 % of State Avg.
■ FY99	68.8%	73.9%	93.2%	113.3%	152.6%
■ FY09	60.0%	72.6%	92.5%	114.1%	155.6%
■ FY19	54.5%	74.3%	90.5%	117.6%	157.1%

State Revenue: Quintile % of State Average FY99-FY09-FY19



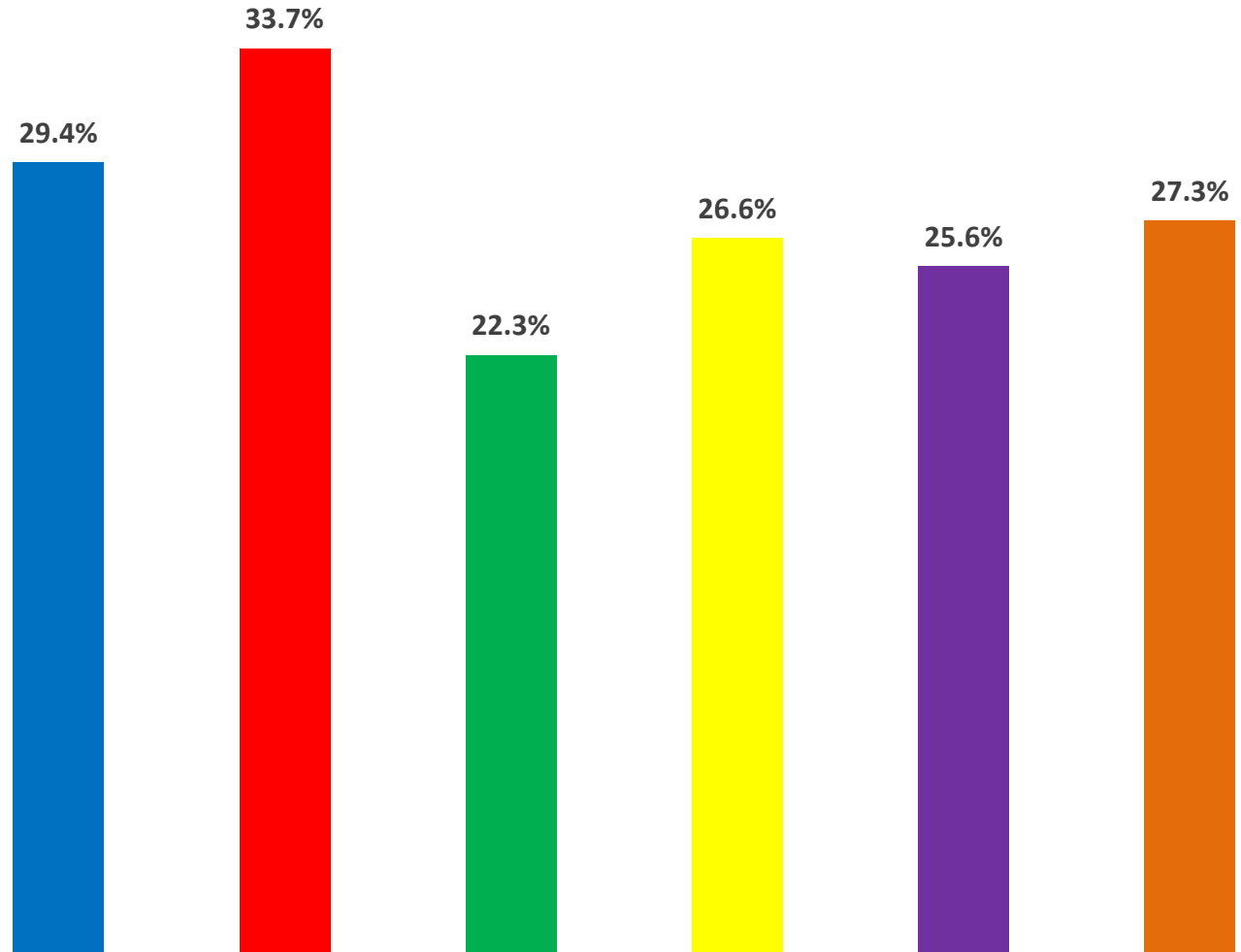
	Quintile 1 % of State Avg.	Quintile 2 % of State Avg.	Quintile 3 % of State Avg.	Quintile 4 % of State Avg.	Quintile 5 % of State Avg.
FY99	147.4%	111.4%	98.2%	82.7%	49.4%
FY09	148.9%	114.2%	95.5%	82.7%	57.3%
FY19	167.0%	119.8%	92.9%	77.1%	44.2%

Local & State Revenue: Quintile % of State Average FY99-FY09-FY19



	Quintile 1 % of State Avg.	Quintile 2 % of State Avg.	Quintile 3 % of State Avg.	Quintile 4 % of State Avg.	Quintile 5 % of State Avg.
FY99	101.5%	89.5%	95.3%	100.6%	109.7%
FY09	101.3%	91.9%	93.9%	99.5%	109.9%
FY19	103.2%	94.0%	91.5%	100.1%	108.3%

Local & State Increase Revenue: FY99-FY19 (Inflation Adjusted)



■ FY99 - FY19 % Increase

Quintile 1

Quintile 2

Quintile 3

Quintile 4

Quintile 5

State Avg.

29.4%

33.7%

22.3%

26.6%

25.6%

27.3%

FY99-FY19 State and Local Revenue Analysis Background Data Charts

1. Percentage of Economically Disadvantaged Students

ODE computes annually the percentage of economically disadvantaged students in each school district. The percentage of economically disadvantaged students is defined by ODE as the percentage of students eligible to receive free or reduced lunch through the Federal lunch program.

Chart 1 shows that in FY18 the lowest school districts (Quintile 1) have an average of 78.9% economically disadvantaged students, while the wealthiest school districts (Q5) have an average of only 24.8% economically disadvantaged students.

As it is widely understood that economically disadvantaged students have greater social & emotional and academic support needs than non-disadvantaged students, this chart demonstrates that an equitable and adequate finding system would provide more resources to these school districts rather than less.

2. Median Income

School district median income is the median income of the residents of the school districts as reported by the Ohio Department of Taxation. For each district this figure represents the median (or “middle”) Ohio adjusted gross income value of the residents of each school district as reflected on their 2016 Ohio income tax returns. The median incomes in each wealth quintile reflect the weighted average of median income of the districts in the quintile. The statewide median income reflects the median (middle value) of the district median income figures.

Chart 2 shows that the pattern of income distribution across Ohio school districts mirrors that of property wealth. The lowest property wealth school districts (Q1) also have the lowest median income (\$26,574), while the highest property wealth school districts have the highest median income (\$45,236), which is 70% higher than the Q1 median income.

Median income is an important measure as it reflects the ability of local residents to support school levies that provide the local share of school funding in Ohio.

3. Class 1 Effective Millage Rate

Ohio’s property tax is more complicated than that of most other states. The primary reason for this is the presence of HB 920 which provides for the reduction of voted millage rates when property values increase as a result of property reappraisal. The purpose of HB 920 is to protect property owners from the tax effects of rising property values, however the consequence for schools and other local governments in Ohio is that voted levies are effectively reduced in rate over time. HB 920 is applied separately to Class 1 (Residential & Agricultural) property and to Class 2 (business & commercial property).

The Ohio Department of Taxation SD1 file shows property values and property tax revenues for each school district. Dividing Class 1 tax revenues by Class 1 valuation will result in the effective Class 1 millage rate for each district. This rate shows the rate at which homeowners in each school district pay property taxes for school operating purposes. Note that a mill is equal to 1/10th of a percent.

Chart 3 shows that the average effective Class 1 millage rate for the poorest districts in the state (Q1) is only slightly lower at 37.38 mills than is the average effective millage rate for the districts in the 2 wealthiest quintiles (Q4 & Q5) at roughly 39 effective mills. **This shows that residential taxpayers in the low wealth districts are paying taxes at nearly the same rate as are their higher wealth counterparts.**

4. Local Tax Effort

The ODE Local Tax Effort Index (published on the annual District Profile aka “Cupp” report) is an index that designed to reflect the extent of the effort residents of school districts make in supporting public elementary and secondary education. This index, one of a number of possible measures for evaluating local effort and is calculated in the context of the residents’ ability to pay by determining the relative position of each school district in the state in terms of the portion of residents’ income devoted to supporting public education. For this calculation a four-step process is utilized as follows:

1. In the first step the ratio of any school income tax and class 1 property taxes charged, to federal adjusted gross income is calculated at the district and the state levels.
2. In the second step the median income of the districts’ residents is divided by the statewide median income to get a ratio of the district to the state median income figures.
3. In the third step the district ratio calculated in the first step above is divided by the ratio calculated in the second step to measure the effort in the context of ability to pay.
4. In the final step the ratio calculated in the third step above is divided by the statewide ratio calculated in the first step to determine the relative effort index in the context of the state as a whole.

Chart 4 shows that the wealthiest school districts (Q5) have the lowest tax effort (0.81) and the poorest school districts in Ohio (Q1) have the second highest tax effort at 1.07, only slightly lower than Quintile 2 at 1.10. ***The Tax Effort measure shows that when ability to pay is taken into account, the low wealth districts are levying taxes at the highest rate relative to their income, while the highest wealth districts are levying taxes at the lowest rate relative to income. This is a more nuanced interpretation of local tax effort than is shown by simply looking at the effective millage rate (see previous chart).***

5. Property Tax Revenue Per Mill

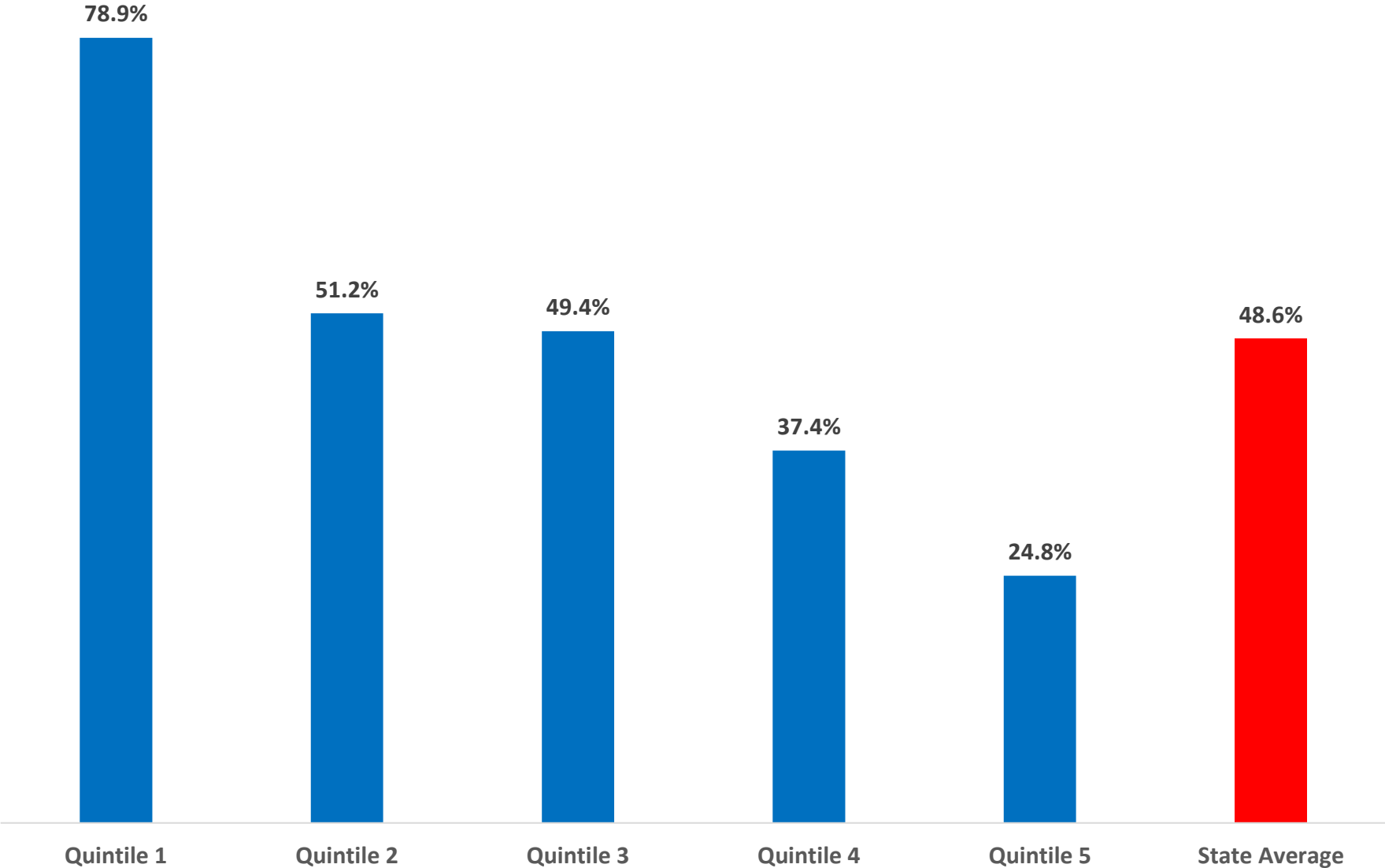
The large variation among Ohio school districts in local revenue raising capacity is the fundamental reason that Ohio’s least wealthy districts struggle to keep pace with their better off peers. This variation in property values directly impacts each individual district’s ability to raise local revenue. For example, a one-mill property tax levy will generate \$75 per pupil for a district with a property value per pupil of \$75,000 and \$225 per pupil for a district with a property value per pupil of \$225,000.

Chart 5 shows that the state’s wealthiest school districts (Q5) can generate nearly 3 times the property tax revenue from 1 mill of taxation (\$744,207) as can the state’s least wealthy districts (Q1) that can only generate an average of \$269,564 from 1 mill of property taxes. Chart 5 shows the same basic finding when revenue per pupil is examined; with the wealthy Q5

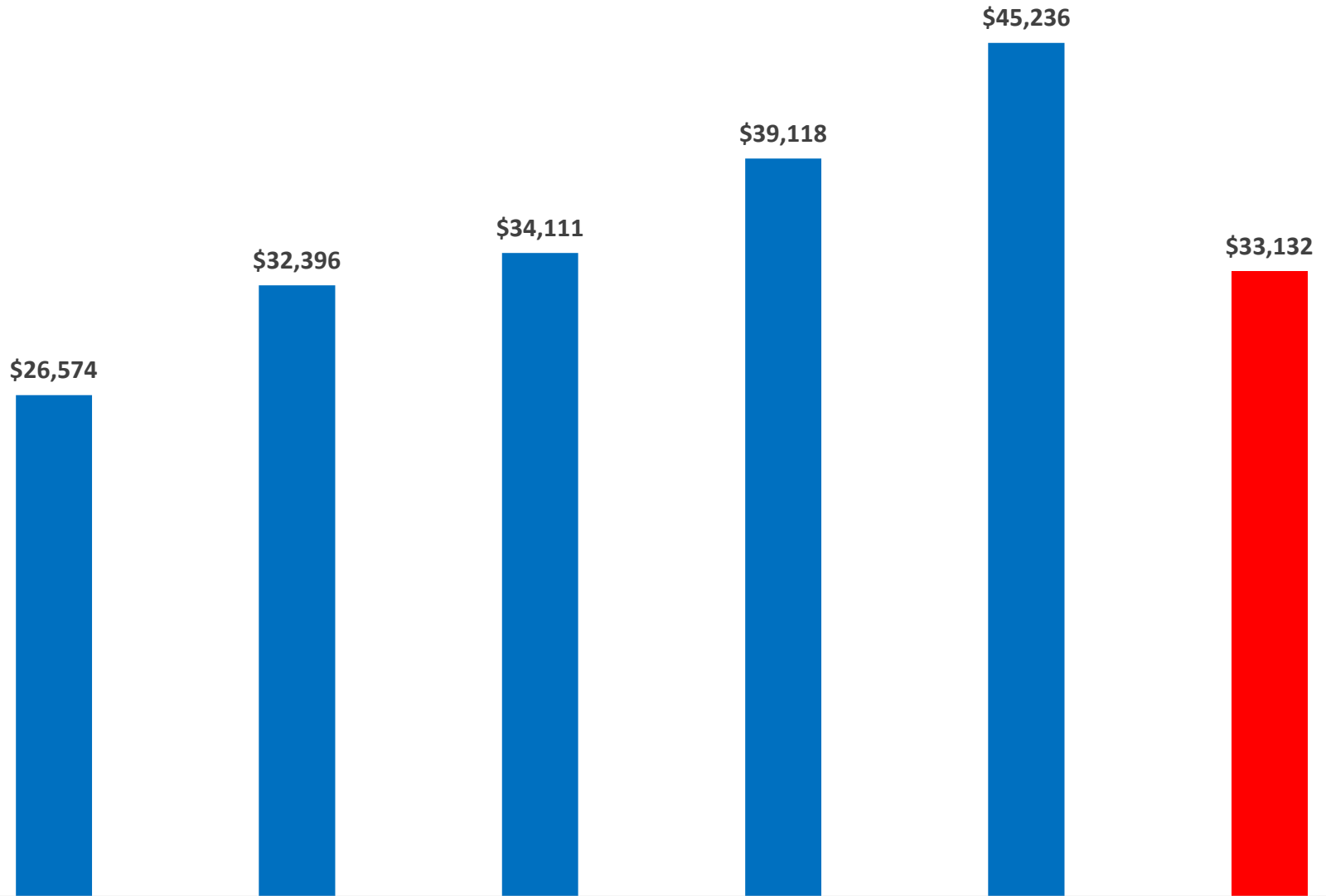
districts generating an average of \$242 per pupil while the poorer Q1 districts generate only \$84 per pupil.

The Capacity Aid component of the school funding formula (added in FY16) was designed to explicitly address this discrepancy.

Economic Disadvantaged: (Fiscal Year 18)



Median Income: (Calender Year 16)



Class 1 Effective Millage: (Tax Year 17)

37.38



Quintile 1

31.61



Quintile 2

33.35



Quintile 3

39.05



Quintile 4

38.83



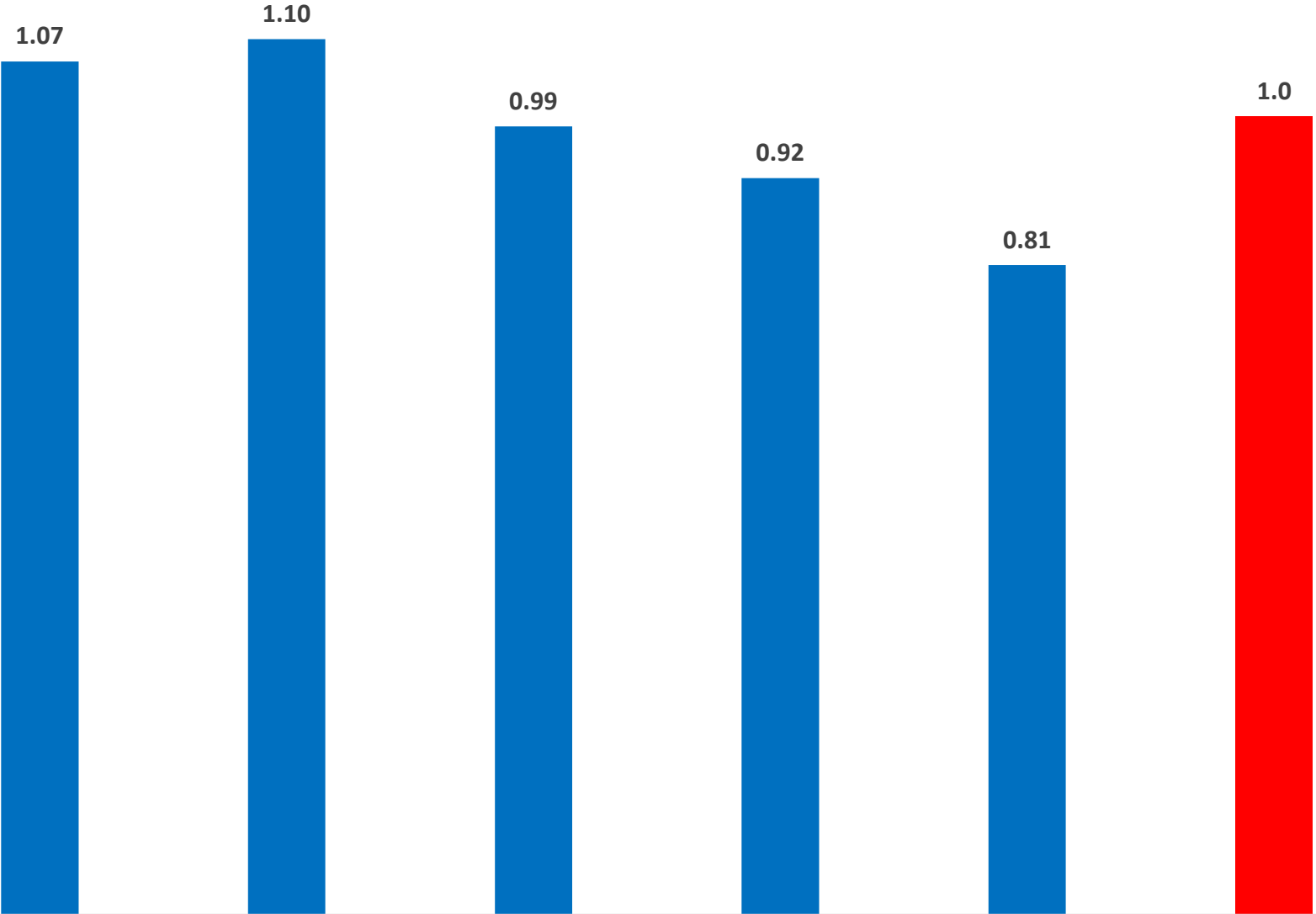
Quintile 5

35.80



State Average

Local Tax Effort: (Fiscal Year 17)



Quintile 1

Quintile 2

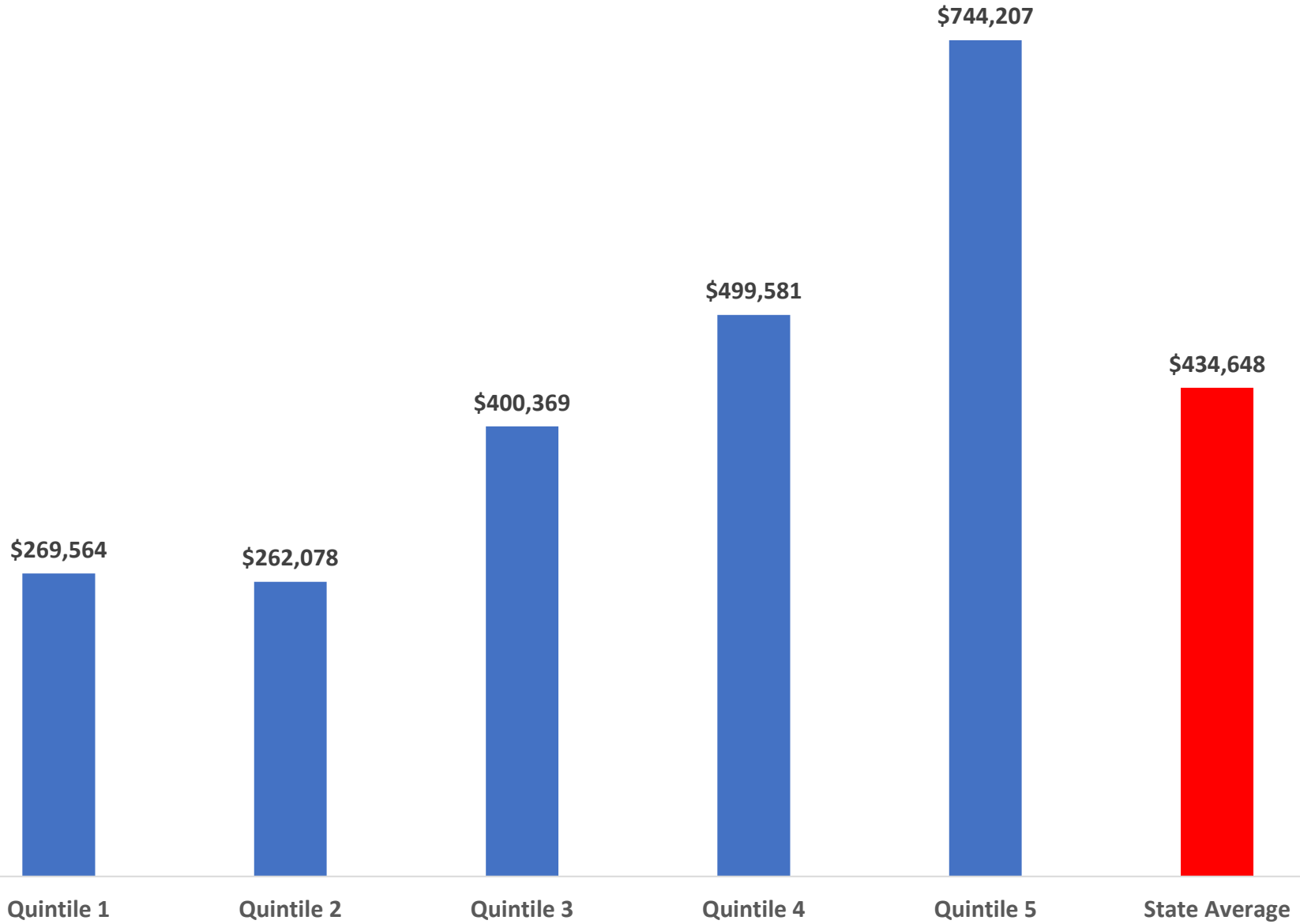
Quintile 3

Quintile 4

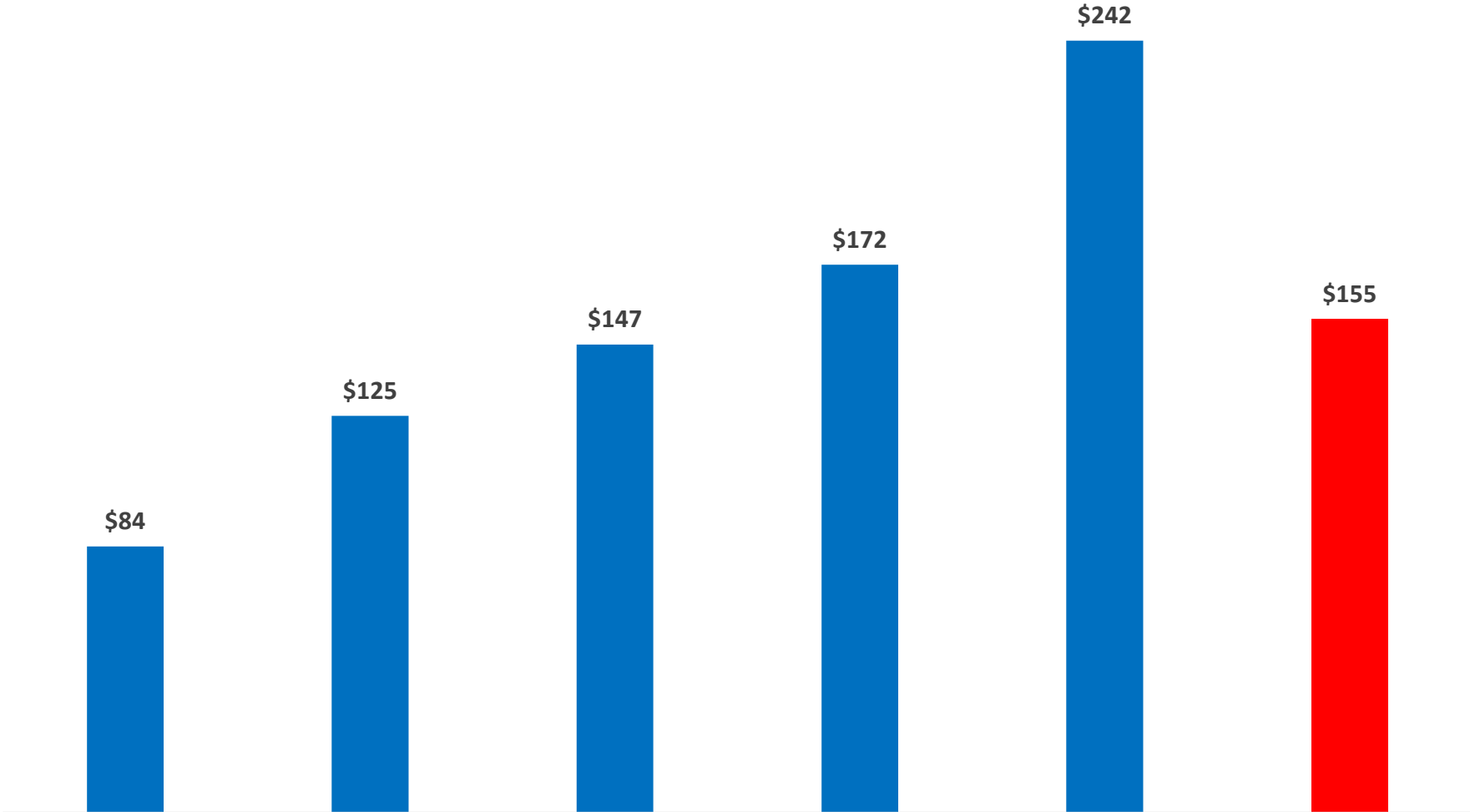
Quintile 5

State Average

Average Revenue Generated By 1 Mill: (Tax Year 17)



Per Pupil Generated By 1 Mill: (Tax Year 17)



Analysis of Changes in the Equity in Ohio School Funding FY91-FY19 Ohio Education Policy Institute August 2018

Ohio’s school funding system has undergone significant changes since the *DeRolph* lawsuit was filed in 1991 and the system was ruled unconstitutional in March 1997. This report provides an assessment of the changes in the overall equity of Ohio’s school funding system over that time period.

This report provides analysis of local and state operating revenues from FY91 through FY19 for 604 school districts (2 Lake Erie island districts with low student enrollment have been excluded as have 6 districts which either merged or became independent over the time frame of this study). Local revenues include property taxes for operating purposes (excluding bond and permanent improvement tax levy revenues) along with school district income taxes for operating purposes (again excluding permanent improvement income tax levies) and since 2012 revenue from casino taxes. State revenues include foundation formula funding along with state replacement payments for foregone Public Utility and general business Tangible Personal Property taxes (PUTTP and TPP, respectively) beginning in FY02.

Table 1 provides an overview of state and local operating revenues for K-12 education in FY91, FY98, FY99, FY09, FY18, and FY19. FY19 figures are estimated based on state aid from the FY19 July #1 ODE School Finance Report (SFPR), TY17 property tax revenues from the Ohio Department of Taxation, ODE estimates of FY19 TPP replacement payments and FY18 school district income tax and casino tax revenues.

Table 1: Total State and Local Funding, FY91, FY98, FY99, FY09, FY18, & FY19

Year	Local Tax Revenue	State Foundation Funding + TPP Replacement	Total State & Local Resources	% Increase in Funding	State Share of Funding
FY91	\$3.904 Billion	\$2.946 Billion	\$6.850 Billion	--	43.0%
FY98	\$5.959 Billion	\$3.738 Billion	\$9.697 Billion	41.6%	38.5%
FY99	\$6.000 Billion	\$4.257 Billion	\$10.256 Billion	--	41.5%
FY09	\$8.402 Billion	\$7.288 Billion	\$15.690 Billion	53.0%	46.5%
FY18	\$10.444 Billion	\$8.099 Billion	\$18.543 Billion	18.2%	43.7%
<i>FY19 Est.</i>	<i>\$10.671 Billion</i>	<i>\$8.138 Billion</i>	<i>\$18.809 Billion</i>	<i>19.9%*</i>	<i>43.3%</i>

Source: All data used in this analysis is from the Ohio Legislative service Commission (LSC), the Ohio Department of Education (ODE) and the Ohio Department of Taxation.

* FY19 % increase shown is from FY09 to FY19

Table 1 shows that overall state and local funding increased by 41.6% from FY91 to FY98¹ and by 53% from FY99 to FY09. However, funding has only increased by 18.2%

¹ In this report, the years FY91-FY98 are analyzed separately from the years FY99-FY19. This is because prior to FY99, under “unit funding” career technical education and special education

from FY09 through FY18 and by 19.9% from FY09 to FY19. In FY91 the base foundation level was \$2,636 per pupil and it increased to \$3,851 in FY99, \$5,732 in FY00, \$6,010 in FY18, and \$6,020 in FY19. The FY99 school year marked the first year of modified funding in the aftermath of the ruling.

Table 1 also shows that the state share of funding actually decreased from 43% in FY91 to 38.5% in FY98, before increasing to 41.5% in FY99 and to 46.5% in FY09. State funding was 43.7% of total state and local revenue in FY18 and is estimated to be 43.3% in FY19.

Table 2 provides similar data to Table 1, but on a per pupil basis.

Table 2: Per Pupil Total State and Local Funding, FY91, FY98, FY99, FY09, FY18 & FY19

Year	Formula ADM	Local Tax Revenue	State Foundation Funding + TPP Replacement	Total State & Local Resources	% Increase in Per Pupil Funding
FY91	1,536,146	\$2,541	\$1,918	\$4,459	--
FY98	1,587,488	\$3,754	\$2,354	\$6,108	37.0%
FY99	1,724,901	\$3,478	\$2,468	\$5,946	--
FY09	1,674,172	\$5,019	\$4,353	\$9,372	57.6%
FY18	1,660,662	\$6,289	\$4,877	\$11,166	19.1%
<i>FY19 Est.</i>	<i>1,648,994</i>	<i>\$6,471</i>	<i>\$4,935</i>	<i>\$11,406</i>	<i>21.7%*</i>

* FY19 % increase shown is from FY09 to FY19

Table 2 shows local tax revenue increased from an average of \$2,541 per pupil in FY91 to \$3,754 in FY98, while state funding increased from an average of \$1,918 per pupil in FY91 to \$2,354 in FY98. Total state and local resources increased by 37.0% from FY91 to FY98. Table 2 also shows that local tax revenue per pupil increased from \$3,478 in FY99 to an estimated \$6,471 in FY19 while state revenue per pupil increased from \$2,468 per pupil in FY99 to an estimated \$4,935 per pupil in FY19. As was the case with the total funding levels shown in Table 1, the per pupil increase in state and local funding for K-12 education was largest from FY99 to FY09 (57.6% increase) and smallest from FY09 to FY19 (21.7%).

Adjustment for Inflation

Tables 3 and 4 show the same data as in Tables 1 and 2, however, the data is adjusted for inflation using the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) measure. Inflation totaled 50.74% from FY99 through FY18, an annual average rate of 2.67% per year.

students were not counted in formula ADM. This makes per pupil amounts in the years prior to FY99 not directly comparable to per pupil amounts in years after FY99.

Table 3 shows that after adjusting for inflation total state and local resources increased by 17.2% from FY91 through FY98 rather than the 41.6% rate shown in Table 1. Similarly, total state and local resources increased by only 17.3% after accounting for inflation from FY99 through FY09, rather than the 53.0% increase shown in Table 1. Finally, the inflation adjusted increase in total state and local resources from FY09 to FY18 was only 2.2%, much lower than the 18.2% rate shown in Table 1, while the inflation adjusted increase in total state and local resources from FY09 to FY19 was only 3.7%, as compared to the 19.9% rate shown in Table 1. *Also note that after adjusting for inflation, state expenditures actually declined (by -3.9%) from FY09 to FY18 and are estimated to remain below FY09 levels in FY19.*

Table 3: Inflation Adjusted State & Local Funding, FY91, FY98, FY99, FY09, FY18 & FY19

Year	Local Tax Revenue	State Foundation Funding + TPP Replacement	Total State & Local Resources	% Increase in Funding
FY91	\$3.904 Billion	\$2.946 Billion	\$6.850 Billion	--
FY98	\$4.932 Billion	\$3.093 Billion	\$8.025 Billion	17.2%
FY99	\$6.000 Billion	\$4.257 Billion	\$10.256 Billion	--
FY09	\$6.443 Billion	\$5.589 Billion	\$12.031 Billion	17.3%
FY18	\$6.929 Billion	\$5.373 Billion	\$12.301 Billion	2.2%
<i>FY19 Est.</i>	<i>\$7.079 Billion</i>	<i>\$5.398 Billion</i>	<i>\$12.477 Billion</i>	<i>3.7%*</i>

* FY19 % increase shown is from FY09 to FY19

Table 4 provides similar data to Table 3, but on a per pupil basis.

Table 4: Per Pupil Inflation Adjusted State & Local Funding, FY91, FY98, FY99, FY09, FY18 & FY19

Year	Local Tax Revenue	% Incr. in Per Pupil Funding	State Aid + TPP Replacement	% Incr. in Per Pupil Funding	Total State & Local Resources	% Incr. in Per Pupil Funding
FY91	\$2,541	--	\$1,918	--	\$4,459	--
FY98	\$3,107	22.3%	\$1,948	1.6%	\$5,055	13.4%
FY99	\$3,478	--	\$2,468	--	\$5,946	--
FY09	\$3,849	10.7%	\$3,338	35.3%	\$7,186	20.9%
FY18	\$4,172	8.4%	\$3,235	-3.1%	\$7,407	3.1%
<i>FY19 Est.</i>	<i>\$4,293</i>	<i>11.5%</i>	<i>\$3,274</i>	<i>-1.9%</i>	<i>\$7,567</i>	<i>5.3%</i>

* FY19 % increase shown is from FY09 to FY19

The data shown in Table 4 follow a similar pattern to that shown in Table 3. Table 4 shows that after adjusting for inflation, per pupil state and local resources increased by 13.4% from FY91 through FY98 rather than the 37.0% rate shown in Table 2. Similarly,

per pupil state and local resources increased by only 20.9% from FY99 through FY09 after accounting for inflation, rather than the 57.6% increase shown in Table 2. Finally, the inflation adjusted increase in per pupil state and local resources from FY09 to FY18 was only 3.1%, much lower than the 19.1% rate shown in Table 2, while the inflation adjusted increase in per pupil total state and local resources from FY09 to FY19 was only 5.3%, as compared to the 21.7% rate shown in Table 2. *Also note that after adjusting for inflation, per pupil state expenditures actually declined (by -3.1%) from FY09 to FY18 and are estimated to remain below FY09 levels in FY19.*

Analysis of the Equity of Ohio’s K-12 Funding System

While the data shown in Tables 1-4 provide a useful overview of how funding for K-12 education in Ohio has changed at both the state and local level over the past 27 years, this data does not shed much light on how these funds have been distributed across Ohio’s 600+ local school districts over this time span. This section of the report provides several different measures to analyze the equity of school funding in Ohio.

A. Comparison of 5th and 95th Percentiles

One common measure of equity is to compare the 5th and 95th percentile values. This is often referred to as the “Federal range” and is expressed as a difference or a ratio. The value of this measure is to show how the difference between low and high values after eliminating the top and bottom 5% (which can be considered to be “outliers”). By this measure, the smaller the gap in funding between the 5th and 95th percentile school districts, the better the equity of the funding system.

Table 5: Comparison of 5th Percentile to 95th Percentile; FY99, FY09, FY18 & FY19 (All \$ Amounts Adjusted for Inflation)

Year	5 th Percentile State and Local Funding Per Pupil	95 th Percentile State and Local Funding Per Pupil	Federal Range Ratio (95 th % / 5 th %)	Federal Range (95 th % - 5 th %)
FY99	\$4,631	\$7,507	1.62	\$2,876
FY09	\$5,766	\$9,130	1.58	\$3,365
FY18	\$5,892	\$9,653	1.64	\$3,761
<i>FY19 (Est.)</i>	<i>\$6,045</i>	<i>\$9,968</i>	<i>1.65</i>	<i>\$3,923</i>

Table 5 shows that in FY99 the district at the 5th percentile in state and local K-12 resources per pupil (the 30th lowest district) had \$4,631 per pupil at its disposal. At the same time, the district at the 95th percentile (the 574th – or 30^h highest district) had \$7,507 per pupil at its disposal. By FY18, the 5th percentile district had inflation-adjusted state and local resources of \$5,892 per pupil and the 95th percentile district had inflation-adjusted total resources of \$9,653 per pupil.

There are two simple ways to examine the figures shown in Table 5 to assess whether equity has improved or not over the FY99-FY19 time frame. The first is to compute the

ratio of per pupil revenues at the 95th and 5th percentiles (this is known as the Federal Range Ratio). The federal range ratio of 1.62 in FY99 indicates that the 95th percentile school district had 62% more resources than the 5th percentile school district. In percentage terms, the funding gap between the 5th and 95th percentile school districts in Ohio decreased to 58% in FY99 before increasing to 64% in FY18 an estimated 65% in FY19. *By this measure, equity increased in the first 10-year period since the DeRolph decision and then slightly worsened over the 2nd 10 years since the DeRolph decision.*

The second method of examining the change in equity between the 5th and 95th percentile districts is to simply see whether the range between the 5th and 95th percentile districts has gotten larger or smaller in terms of dollars. By this measure, Table 5 clearly shows that equity in Ohio’s funding system has decreased steadily since FY99 as the funding gap (after adjusting for inflation) between the 5th and 9th percentile school districts has increased from \$2,876 per pupil in FY99 to \$3,365 in FY09, to \$3,761 in FY18 and finally to an estimated \$3,923 per pupil in FY19.

B. Coefficient of Variation and McLoone Index

One drawback of the federal range and federal range ratio approach to examining equity is that it is based on only 2 data points (the 5th and 95th percentile values). The Coefficient of Variation is an equity measures that is based on all of the observations in a data set, while the McLoone Index is based on an analysis of the extent to which the bottom half of the distribution differs from the median (midpoint) value. These equity measures are shown in Table 6.

Table 6: Coefficient of Variation and McLoone Index; FY99, FY09, FY18 & FY19 (All \$ Amounts Adjusted for Inflation)

Year	Mean	Standard Deviation	Coefficient of Variation (Std Dev / Mean)	Median	McLoone Index (% of Funding vs Median)
FY99	\$5,946	\$1,122	0.189	\$5,301	0.94
FY09	\$7,186	\$1,266	0.176	\$6,630	0.92
FY18	\$7,407	\$1,321	0.178	\$7,306	0.90
<i>FY19 (Est.)</i>	<i>\$7,566</i>	<i>\$1,354</i>	<i>0.179</i>	<i>\$7,405</i>	<i>0.90</i>

The coefficient of variation is the ratio of the standard deviation to the mean (average) of a data set. In this context of school funding, the coefficient of variation compares how widely school funding varies across Ohio’s school districts (this is measured by the standard deviation) and compares it to the average funding level. If equity were perfect and all districts received the same funding per pupil, then the standard deviation would be zero as would the coefficient of variation. Thus a lower value for the coefficient of variation means greater equity. Table 6 shows that the coefficient of variation decreased from FY99 to FY09, before increasing slightly in FY18 and FY19. *By this measure equity improved in the 1st 10 years after the DeRolph decision before becoming a bit more inequitable in the 2nd 10 years after the DeRolph decision.*

The McLoone index is a measure of inequity among the school districts that are in the bottom half of total resources². It computes the ratio of their actual funding to what their funding would be if all were funding at the median per pupil level. If the bottom half of the school districts had no resources at all the McLoone Index would be zero and if all districts had the same resources, the McLoone Index would be 1. Thus when using the McLoone index, a higher value means more equity. Table 6 shows that equity as measured by the McLoone Index has decreased from FY99 to FY09 and then again in FY18 and FY19. This means that *the school districts below the median have moved farther away from the median in terms of total state and local resource level from FY99 to FY19*. This finding is consistent with the finding in Table 5 that the gap between the 5th and 95th school districts has increased in dollar terms over the same time frame.

C. Property Wealth Quintile Analysis

While the various equity measures discussed immediately above reflect different statistical methods of examining the equity of Ohio’s school funding system from FY99 to FY19 a more direct – and perhaps more intuitive – approach is to sort Ohio’s 600+ school districts into 5 groups (or “quintiles”) and to examine the level of resources in each quintile over time³.

Tables 7-9 provide an overview of the inflation–adjusted changes in local, state and state + local funding from FY99 through FY19.

Table 7 shows that in \$ terms the poorest fifth of Ohio school districts (Quintile 1) actually experienced a \$54 per pupil decrease in local tax revenues after inflation is taken into account from FY99 to FY19, while the wealthiest districts (Quintile 5) received an average increase of \$1,438 in local tax revenues. *In percentage terms, the poorest group of school districts showed a -2.3% decrease in per pupil local tax revenues while the other 4 quintiles all experienced average increases in per pupil local revenues of 20-28% after inflation is adjusted for.*

² For the purposes of the McLoone Index the “bottom half of school districts” is defined as the group of low-wealth school districts whose total number of students is one half of the total number of students in that year.

³ For the purposes of this report, the wealth quintiles have been defined so that each contains an equal number of school districts. In addition, the quintiles used in this report are based on an average of FY99 and FY18 property wealth per pupil. This was done in order to control for the changes in property wealth that have occurred since FY99 as a result of changes in the taxation of business and public utility tangible personal property, the impact of oil and natural gas exploration, fluctuations in CAUV values, and the impact of the 2008-2009 recession on home values.

Table 7: Per Pupil Local Tax Revenues; FY99, FY09 & FY19 (All \$ Amounts Adjusted for Inflation)

Wealth Quintile	FY99	FY09 (Inflation Adjusted)	FY19 (Inflation Adjusted)	Inflation Adj. \$ Increase FY99 to FY19	Inflation Adj. % Increase FY99 to FY19
1	\$2,393	\$2,310	\$2,339	(\$54)	-2.3%
2	\$2,569	\$2,794	\$3,188	\$619	24.1%
3	\$3,240	\$3,559	\$3,884	\$644	19.9%
4	\$3,940	\$4,390	\$5,048	\$1,108	28.1%
5	\$5,306	\$5,987	\$6,744	\$1,438	27.1%
State Avg.	\$3,478	\$3,849	\$4,293	\$815	23.4%

Table 8 shows that Ohio’s poorest school districts (Q1) actually received the largest average increase in inflation-adjusted state aid in both dollars (\$1,830 per pupil) and percentage (50.3%) terms from FY99 to FY19. By contrast, the wealthiest school districts (Q5) received an average inflation-adjusted increase in state aid of \$230 per pupil and average percentage increase of 18.9% from FY99 to FY19.

Table 8: Per Pupil State Funding; FY99, FY09 & FY19 (All \$ Amounts Adjusted for Inflation)

Wealth Quintile	FY99	FY09 (Inflation Adjusted)	FY19 (Inflation Adjusted)	Inflation Adj. \$ Increase FY99 to FY19	Inflation Adj. % Increase FY99 to FY19
1	\$3,639	\$4,970	\$5,469	\$1,830	50.3%
2	\$2,750	\$3,812	\$3,922	\$1,172	42.6%
3	\$2,424	\$3,188	\$3,042	\$618	25.5%
4	\$2,040	\$2,762	\$2,523	\$483	23.7%
5	\$1,218	\$1,913	\$1,448	\$230	18.9%
State Avg.	\$2,468	\$3,338	\$3,274	\$806	32.6%

Table 9 shows that when state and local resources are combined, the poorest school districts (Q1) received 29.4% increase in inflation-adjusted total resources per pupil from FY99 to FY19, while the wealthiest school districts (Q5) received a slightly smaller 25.6% increase in inflation-adjusted total resources per pupil over the same time frame. The pattern is similar when looked at in dollar terms, with the poorest districts (Q1) receiving an inflation-adjusted average increase of \$1,775 per pupil in total state and local resources, while the wealthiest districts (Q5) received a \$1,668 per pupil average increase after inflation is taken into account. Furthermore, the school districts in quintiles 2 and 3, which began the period with the lowest average total state and local resources remain in that position in FY19. This disparity is particularly for the middle wealth districts (Q3) as they received the smallest average increase and are now even further behind the wealthiest districts than they were in FY99.

Table 9: Per Pupil State & Local Resources; FY99, FY09 & FY19 (All \$ Amounts Adjusted for Inflation)

Wealth Quintile	FY99	FY09 (Inflation Adjusted)	FY19 (Inflation Adjusted)	Inflation Adj. \$ Increase FY99 to FY19	Inflation Adj. % Increase FY99 to FY19
1	\$6,033	\$7,281	\$7,808	\$1,775	29.4%
2	\$5,319	\$6,606	\$7,109	\$1,790	33.7%
3	\$5,664	\$6,747	\$6,925	\$1,261	22.3%
4	\$5,980	\$7,152	\$7,571	\$1,591	26.6%
5	\$6,524	\$7,900	\$8,192	\$1,668	25.6%
State Avg.	\$5,946	\$7,186	\$7,567	\$1,621	27.3%

Tables 10-12 provide a more detailed look at the change in equity of Ohio school funding from FY99-FY18. The tables take the inflation-adjusted data in tables 7-9 and show the \$ and % changes in each of the two 10-year time periods since the *DeRolph* ruling (FY99-09 & FY09-19).

Table 10: Change in Local Tax Revenues; FY99-FY09, FY09-FY19

Wealth Quintile	Infl. Adj \$ Increase FY99 to FY09	Infl. Adj \$ Increase FY09 to FY19	Infl. Adj % Increase FY99 to FY09	Infl. Adj % Increase FY09 to FY19
1	(\$83)	\$29	-3.5%	1.2%
2	\$225	\$393	8.8%	14.1%
3	\$319	\$324	9.9%	9.1%
4	\$450	\$658	11.4%	15.0%
5	\$681	\$756	12.8%	12.6%
State Avg.	\$371	\$444	10.7%	11.5%

Table 11: Change in State Resources; FY99-FY09, FY09-FY19

Wealth Quintile	Infl. Adj \$ Increase FY99 to FY09	Infl. Adj \$ Increase FY09 to FY19	Infl. Adj % Increase FY99 to FY09	Infl. Adj % Increase FY09 to FY19
1	\$1,331	\$498	36.6%	10.0%
2	\$1,062	\$110	38.6%	2.9%
3	\$764	(\$146)	31.5%	-4.6%
4	\$722	(\$239)	35.4%	-8.7%
5	\$695	(\$465)	57.1%	-24.3%
State Avg.	\$870	(\$64)	35.2%	-1.9%

Table 12: Change in State + Local Resources; FY99-FY09, FY09-FY19

Wealth Quintile	Infl. Adj. \$ Increase FY99 to FY09	Infl. Adj \$ Increase FY09 to FY19	Infl. Adj % Increase FY99 to FY09	Infl. Adj % Increase FY09 to FY19
1	\$1,248	\$527	20.7%	7.2%
2	\$1,287	\$503	24.2%	7.6%
3	\$1,083	\$178	19.1%	2.6%
4	\$1,172	\$419	19.6%	5.9%
5	\$1,376	\$291	21.1%	3.7%
State Avg.	\$1,240	\$380	20.9%	5.3%

There are several key findings that can be derived from the data shown in Table 10-12.

- First, there is a pronounced trend in each of the two 10-year periods after *DeRolph* showing that the largest increases in local revenues were in the wealthiest school districts, while the smallest increases were in the poorest school districts (with Quintile 1 actually showing an inflation-adjusted decrease in local revenue from FY99 to FY09).
- Second, there is a very stark difference in the pattern of state aid from FY99 to FY09 vs. that from FY09 to FY19. From FY99 to FY09 the inflation adjusted state average increase in per pupil state resources was \$870 per pupil, while there was a -\$64 pupil inflation-adjusted decrease in state resources per pupil during the FY09 to FY19 time frame. In both time frames lower wealth school districts received larger Increases than did wealthier districts (although the Quintile 5 percentage increase from FY99-FY09 was higher than that of less wealthy districts due to the lower starting base level of funding).
- Finally, in terms of total state and local resources, Table 12 shows that in both dollar and percentage terms the first 10 years after the *DeRolph* ruling was responsible for the bulk of the increase in total resources apparent since FY99.

Table 13 below provides a final perspective on the extent to which the distribution of resources among Ohio’s 600+ school districts has change since the *DeRolph* ruling. From FY99 through FY19, the share of total resources directed to the lowest wealth school districts has fallen from 26.4% in FY99 to 24.1% in FY19. Meanwhile the share of total resources directed to the highest wealth school districts has increased from 22.2% in FY99 to 23.4% in FY19. At the same time, districts in quintiles 2 and 3 have seen very little change in the share of total resources that they receive and continue to receive a share of total resources that is lower than the percentage of total students that they educate.

Table 13: Share of State and Local Resources by Wealth Quintile

Quintile	FY19 # of Students	FY19 % of Students	FY99 % of S+L Resources	FY09 % of S+L Resources	FY19 % of S+L Resources	FY17 ODE Tax Effort
1	378,439	22.9%	26.4%	24.0%	24.1%	1.07
2	246,858	15.0%	13.6%	13.9%	14.0%	1.10
3	320,258	19.4%	17.5%	17.5%	17.7%	0.99
4	342,340	20.8%	20.3%	20.8%	20.7%	0.92
5	361,098	21.9%	22.2%	23.8%	23.4%	0.81
Total	1,648,994	100.0%	100.0%	100.0%	100.0%	--

Table 13 also shows the average tax effort for the districts in each wealth quintile. The wealthiest (Q5) school districts have the lowest tax effort by the measure, while the two lowest wealth quintiles have the highest tax effort.

D. Conclusions and Summary of Key Findings

- 1) Total state and local operating revenue increased by 83.4% from FY99 through FY19. However, once inflation is factored in, the net increase in state and local revenue is only 21.7%, or an average of 1.1% annually.
- 2) On a per pupil basis, the results are similar, showing a 91.8% increase from FY99 to FY09 falling to a 27.3% increase once inflation is taken into account. That is an average 1.4% annual increase in per pupil state and local revenues from FY99 through FY19.
- 3) On a per pupil basis, inflation adjusted state revenues increased by 35.3% from FY99 to FY09, but have decreased by **-1.9%** from FY09 to FY19.
- 4) Similarly, inflation-adjusted per pupil state and local revenues increased by 20.9% from FY99 to FY09, but have increased by only 5.3% from FY09 to FY19.
- 5) Viewed from another perspective, the lowest wealth (Q1) districts have seen their share of total state and local resources fall from 26.4% in Fy99 to 24.1% in Fyt19, while the highest wealth (Q5) school districts have seen their share of total state and local resources increase from 22.2% in FY99 to 23.4% in FY19.
- 6) Unsurprisingly, given the above five points, a variety of equity measures indicate that equity in state and local school operating revenues improved from FY99 to FY09, but regressed somewhat from FY09 to FY19.

Analysis of property wealth quintiles provided additional insights into the distribution of local, state, and combine state and local revenues from FY99 through FY19.

- 7) Inflation adjusted local revenues increased an average of roughly 20-28% for the 4 wealthiest groups of school districts from FY99-FY19, however for the poorest quintile of school districts inflation adjusted local revenues actually decreased from FY99 through FY19.

- 8) The opposite trend was true with state revenues, as the lowest wealth school districts (Q1) experienced an inflation-adjusted increase of 50.3% while the wealthiest districts received an increase of 18.9% in per pupil state revenues.
- 9) When the total change in combined state plus local revenues is examined, the lowest wealth quintile 1 school districts received an inflation-adjusted increase of 29.4% while the wealthiest (quintile 5) school districts received an inflation-adjusted increase of 25.8%.
- 10) In \$ terms this amounts to an inflation adjusted difference of only \$107 per pupil between the increase in revenues received by the lowest wealth school districts (\$1,775 per pupil) versus the increase received by the wealthiest districts (\$1,668 per pupil). *This relatively small gap explains why the improvement in school funding equity since DeRolph has been so modest.*